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Independent Packages Run With VSE

By Don Leavitt
CW Staff

PRINCETON, N.J. — Applied Data Research, Inc. (ADR) has succeeded in getting two of its major software products — The Librarian and Vollie — operational on an IBM 4331 CPU running under DOS/VSE.

The Librarian stores source programs in compressed form, normally on disk, for later retrieval, updating or compilation. Vollie supports on-line program development in a DOS/VS environment and includes interfaces with The Librarian.

ADR believes it is the first vendor to have system-sensitive software up and running in the new environment. The tests, run at a user installation in Germany, involved not only a change in CPU and operating system, but also use of IBM's 3310 Fixed Block Architecture (FBA) disk drives, according to ADR Vice-President Robert M. Caughey.

Caughey believes the results of the tests should allay fears some users have about irreconcilable incompatibility between software products from independent vendors and the still relatively unknown DOS/VSE. There are some mismatches between DOS/VS and VSE, but they can be overcome, he maintained.

The overall success of the exercise indicates that users with competent systems programming staffs should be able to adapt software built in-house to function in the new setting. Caughey also noted that DOS/VSE will be largely transparent to most applications-oriented programs.

Not as Easy as It Sounds

But some "glitches" in the test sessions suggest that making whatever changes are necessary may not be as easy as it sounds, in large part because there were some discrepancies between current DOS/VSE documentation and DOS/VSE as it has been implemented, according to Caughey.

ADR prepared carefully for the tests. Not long after IBM's Jan. 30 announcement of

(Continued on Page 6)

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NEWSPAPER

FCC Lays Claim To Regulation Of Ecom Service

By Phil Hirsch
CW Washington Bureau

WASHINGTON, D.C. — The U.S. Postal Service plans for its Electronic Computer-Originated Mail (Ecom) service ran into a major obstacle last Wednesday when the Federal Communications Commission (FCC) ruled that it must authorize the service beforehand.

Meanwhile, the Senate Appropriations Committee passed and sent to the floor for a final vote the fiscal 1981 Postal Service Appropriations Bill. It contains language prohibiting the Postal Service from procuring, owning or operating an electronic message system (EMS) or marketing "directly to the public electronic message services without congressional approval."

(Continued on Page 8)

INS Draws Fire On Automation

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — The road to automation is rarely a smooth one, especially if an organization runs afoul of government regulations, the U.S. Immigration and Naturalization Service (INS) recently found when it moved to computerize its paper-choked operations.

"Pressing problems demand quick answers," INS Commissioner Leonel Castillo told a House of Representatives subcommittee July 23 in an attempt to get back on track a $25 million nationwide automation plan. The General Services Administration (GSA) halted the INS scheme after the House Government Information and Individual Rights Subcommittee con-

(Continued on Page 8)

Future of Technology: Fact Eerier Than Fiction

By E. Drake Lundell Jr.
CW Staff

ST. PAUL DE VENCE, France — Science fact met science fiction here recently to see if either could help project the computer future — with fact clearly presenting the eeriest scenarios.

In a three-day meeting at the Univac International Executive Center, nestled among the trees high above the Cote d'Azur, scientists and science fiction writers discussed — in formal sessions and beside the pool — alternate scenarios for the future. Despite the showing of movies such as "2001" and "The Forbin Project," the most far-out future for technology was predicted by scientists and futurists — even if their projections were the most realistic.

In Stanley Kubrick's "2001," the computer Hal is portrayed as perhaps more human than the human counterparts with whom "he" is voyaging through space. Hal eventually refuses the human orders he receives and proceeds on his own.

In "The Forbin Project," a movie released in 1970, all American defenses are put under the control of a computer called Colossus. At the same time, the Russians develop a similar system called Guardian.

The two demand to be linked and, in spite of all human attempts to block them, they jointly rule the world, enforcing their demands by launching missiles against recalcitrant humans.

In both cases, the computer systems end up controlling the humans who built them and whom they were to serve.

Systems in Space

While the scientists at the conference did not come up with any such doomsday predictions, perhaps their projections were just as radical, even if based more in fact.

For example, English author and journalist Rex Malik predicted that in the future huge computers based on Josephson junctions would be built and kept in the cold regions of space. They would be linked to ground stations through vastly improved tele-

(Continued on Page 2)

Amdahl Offers Smaller 470V/7, CPU Accelerator

By Howard A. Karten
CW Staff

SUNNYVALE, Calif. — Amdahl Corp. last week added two products to its line of high-end, IBM 370-compatible processors: a truncated version of its 470V/7 called the V/7A that reportedly offers up to 80% of the performance of its predecessor and an accelerator for the 470V/7A, V/5 and V/5-II processors.

The 470V/7A, designed for customers "who need a mid-range, high-performance computer now," includes all of the 470V/7's features as well as the accelerator, the firm said. While it is described as offering 80% of the 470V/7's performance, however, prices appear to average 88% of the faster system.

Available in configurations of 4M, 6M, 8M, 12M and 16M bytes and with 12 or 16 channels, the 470V/7A will be manufactured both in Sunnyvale and at Amdahl's Republic of Ireland facility. First customer shipments are

(Continued on Page 4)

Users Still Snubbing Privacy Safeguards

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — Two years after the U.S. Privacy Protection Study Commission completed its work, the nation's largest corporations have yet to adopt adequate privacy safeguards for employee records, many of which are computerized, according to commission chairman David F. Linowes.

Addressing a press conference here July 27, Linowes reported that "personal privacy pollution" is still a considerable problem for the 20 million people employed by the Fortune 500 companies.

Linowes, now a professor of Political Economy and Public Policy at the University of Illinois, came to Washington to detail the findings of a study he conducted through the university's Sorvey Research Laboratory. Despite positive steps by industry to adopt the privacy commission's recommendations, not enough has been done, he said.

The commission's final report, delivered to President Carter July 12, 1977, recommended giving industry a "reasonable opportunity to adopt voluntarily appropriate privacy safeguards," Linowes recalled. The Fortune 500 study was undertaken to gauge implementation of the privacy commission report after two years — which, he said, marks the end of that "reasonable time."

What's Happening Now

Based on a sampling of 145 of the Fortune 500 firms, Linowes outlined the status of privacy protection for employees of the largest

(Continued on Page 8)

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A Note of Caution

By E. Drake Lundell Jr.
CW Staff

ST. PAUL DE VENCE, France – In spite of all the projections from both scientists and science fiction writers here recently, one note of caution was sounded.

"The future may be farther away than you think," Dr. Heinz Wolff, head of bioengineering at the Clinical Research Centre in Harrow, England, told the group of technologists and visionaries gathered at the Univac International Executive Center.

Wolff maintained that life for the upper class really has not changed that much in the last 40 years except for the advent of television and swifter and more universal communications. Great strides have been made in the health and education benefits for others, he acknowledged, but the basic day-to-day living of the upper and upper middle classes has not been affected in any basic ways by the revolutions that have occured in technology.

There are many reasons for this and for probable slow change in the future, Wolff said, pointing out that the number of gates on a chip may not be as important as basic social priorities.

For one thing, the introduction of technology is anti-egalitarian, Wolff said. Fewer and fewer people are able to deal with technology as it becomes more complex, so society may not be able to make rational decisions about its use or the rate of its introduction, which may bring social backlashes against its use.

This division between the technologists and nontechnologists will accentuate the differences between people, he said, and lead to problems of how to reward the minority that can deal with the technology at a point when that technology is replacing jobs.

At the same time, he claimed that technology is the antithesis of skill and its introduction may cause people to lose necessary skills, leading to an age where intellectual life will die out.

There is a great fear of losing jobs to computers, he said, and society may well find that the lowest cost society is the one with the greatest employment. In other words, it may actually be cheaper in the long run to keep people working than to displace them with computers, he said.

Another factor that will limit the introduction of technology, according to Wolff, is the management of dissident minorities. If control and power of computer systems becomes centralized, society could be easily disrupted by small minorities that would have easy targets.

If such a small group could disrupt a major computer system, the effects on overall society would be drastic, he said.

Furthermore, while technologists and others talk about the benefits of computer and communications technology, there is no real evidence that the public wants these alleged benefits, Wolff said. On the one hand, the systems allow better social measurement, he noted, but the flip side is more control.

Too often, Wolff said, scientists and others overestimate the amount of time it takes to implement their ideas and the amount of time it actually takes for technology to penetrate society. As if to underscore Wolff's point, many attendees here – while discussing universal communications systems – had difficulty placing calls to either the U.S. or UK, often waiting hours for lines.

Fact Eerier Than Fiction

(Continued from Page 1)

communications facilities that would encircle the globe.

Josephson junctions must be cooled to near absolute zero in order to work, and the energy required to keep them on Earth at those low temperatures may be too great to be practical, he said.

Univac staff scientist and futurist, Dr. Earl Joseph, projecting only into the near future, foresaw the day when a chip could hold the same number of circuits as the human brain. By the end of the 1980s, he said, one chip will be able to hold a number of gates or circuits equal to all of the computer gates or circuits ever made up until this point in time.

Before the end of the century, 100 billion gates will be put on a chip – roughly equal to the number of neurons in the human brain, he said.

But Joseph predicted that computers on chips of this density would not be "takeover machines," as predicted by the science fiction writers, but would rather be used as "amplifier appliances" for humans, These will allow people to do more and will take people away from jobs as a result – a result he saw as good.

The silicon revolution, he noted, is changing the entire idea of computers. It will also cause major changes in social institutions in the future "by changing the infrastructure of society."

The devices will replace many jobs quickly, Joseph predicted, but this should raise the quality of life if society uses the educational process to prepare for the coming changes.

In one example of how the silicon revolution could displace jobs while saving energy, Joseph noted that engineers are presently working on machines that can harvest crops and turn them into finished products right in a farmer's field. Machines could handle the planting of corn, for example; other machines in the form of microminiaturized factories would then do the harvesting and make corn flakes. They would then be loaded on computer-controlled trucks for delivery.

"It's on the drawing boards now," he said, and the technology will permit some form of these devices soon.

This Week

NEWS

Fire Stops Stanford DP Operations for 26 Hours 4
Southern California Users Warned of 80° Minimum . 5
Man Who Admitted Billing Scheme Kills Self 6
INS Automation: No One Disputed Its Necessity 9
U.S. Economic Climate Stifling Innovative Firms . . . 10
Let Federal Contractors Retain Patent Rights 11
'DP' Means 'Rehabilitation' at Milan 12
Houstonians Still Flocking to Car Pool System 13
Managers on the Move 14
System Monitors Use of Nuclear Material in Lab . . . 15
Calendar 16
Roving Terminal to Access Library for Hospitals . . . 18

EDITORIAL

Editorial: Corporate Responsibility 20
Human Connection: End User Training a 'Fine Art' . 21
Taylor Report: Approach Combats Deception 21
Advice to NCC Critics: Take Part in Planning 21
Electronic Mail Has Come a Long Way 23
The Hexadecimal Kid and His Faithful Dog Ascii . . . 24

SOFTWARE & SERVICES

Book Reps DP Practices, Management 25
Advisors Offered 'Partax' to Study Tax Changes . . . 26
Five RSTS/E Files Linked 27
Packages Handle NCR Growth Plan 30

COMMUNICATIONS

Manitoba Town to Test Viewdata-Type Service 31
Portable Terminals Put Light on Energy Savings . . . 33
National Semi Offers CRT/Keyboard Boards 34
Fiber-Backed Distributed Systems on Their Way . . 35
Teleprinter Offers Operation at 45 Char./Sec 39
Recorder Accepts RS-232 Data 40

SYSTEMS & PERHIPHERALS

Bank's Investment Turns Less Into More 41
Modernization and anxieties: IBMer 41

MINIWORLD

HP Reduces Prices of 3000, 300 Minis 45
Controller Links PDP-11, Four SMD Drives 50

MICROCOMPUTING

Micro Opens Savings Account for Bank 51
APL Interpreter Ready for Z80 52

COMPUTER INDUSTRY

AT&T Accused of Modem Royalty Bias 53
Market for Used IBM Equipment to Double by '80 . . 53
Itel Halts Plans to Manufacture Mainframes 56
Calcomp Acquires Gould Printer/Plotters 57

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> "The future of DOS sorting is SyncSort."
>
> "SyncSort deserves a place in any software cabinet."
>
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Overheated Transformer to Blame

Fire Halts Stanford DP Operations 26 Hours

By Jeffry Beeler
CW West Coast Bureau

PALO ALTO, Calif. — Stanford University's information processing center shut down for approximately 26 hours early last week when a fire in the control panel wiring halted the motors that drive the facility's air conditioning and water cooling units.

The blaze, which was confined to a utility bin separate from the center's DP room, caused no injuries, damaged no computing hardware and produced no serious disruptions of campus activities, site director Ed Williams claimed. Critical jobs usually performed on-line in the facility were shipped outside and done manually until full DP operations were restored the following evening.

The site's main environmental control system was scheduled to resume operation by the end of the week. In the meantime, standby air conditioners were expected to take up most of the center's cooling slack.

No exact damage estimates for the fire were available last week, but Williams guessed the destruction probably would not exceed $10,000. Most of the loss is associated with the cost of replacing a faulty transformer.

Transformer Overheats

The fire started at about 8:50 p.m. on Monday, July 30, when a transformer overheated and ignited a bundle of wires behind the control panel responsible for the center's air conditioning and chilled water units, which are situated on the building's top floor. Supervisory personnel on duty at the time first suspected a problem with the environmental control system when the temperature began to rise slowly in the DP room below.

An initial check of the cooling system's control panel revealed nothing amiss. But when supervisors returned to the utility room a few minutes later for a second inspection, they noticed smoke billowing from the control panel.

After dousing the flames with a hand-held fire extinguisher, they entered the utility room and discovered that the 25-horsepower motor responsible for propelling the computing room's electric cooling system had stopped. To minimize the chances of hardware damage, the supervisors then shut down the center's main CPU, a 6M-byte IBM 3033, and all its associated peripherals.

Running under Release 1.7 of IBM's OS/SVS operating system, the 3033 forms the heart of a 200-terminal configuration used mainly for assisting Stanford research projects and for performing a smattering of administrative and classroom tasks. Its most critical application, however, involves the processing of patient censuses and other health care-related reports for the Stanford Medical Center.

When the university's computing site goes down as it did last week, DP personnel usually send their health care applications to the medical center for manual processing. Because the school's most recent downtime episode lasted only about a day, the manual backup system weathered the crisis with hardly a hitch, Williams said.

But if the processing interruption had continued for just a few more days, the manual system "would have been in deep trouble," he added.

The blaze responsible for the shutdown of Stanford's 3033 system broke out in the information processing facility's new headquarters, which is in the final stages of construction. The center had just converted from an IBM 370/168 to the 3033 and had almost finished switching from a manual to an automatic environmental control system when the fire occurred.

Amdahl Trims 470V/7, Offers Accelerator

(Continued from Page 1)

scheduled for September.

The 470 V/7A, which contains the same main memory as the 470V/7, can be field-upgraded to a V/7 or V/8, the firm said — a feature that appears to be on its way to becoming standard on IBM 370 plug-compatible mainframes. Like the other Amdahl systems, the one announced last week runs just about all standard IBM operating systems.

The minimum-configuration 470V/7A — a 4M-byte, 12-channel version — is priced at $2,450,000. A 6M-byte unit with 12 channels costs $2,590,000 and a 16M-byte unit costs $3,290,000.

With 16 channels, a 4M-byte unit costs $2,600,000 and an 8M-byte unit will set users back $2,880,000. The largest 470V/7A — 16 channels and 16M bytes — costs $3,440,000.

At the same time it announced the truncated 470V/7, Amdahl said it is separating maintenance and leasing charges at the request of customers. However, the separation does not represent any price increase, a spokesman claimed.

Lease prices for a 4M-byte, 12-channel will be $59,950/mo, exclusive of maintenance, on a two-year plan and $48,650 on a four-year plan; a two-year lease for a 12-channel; 8M-byte machine will be $69,650/mo and a four-year lease on that system will be $57,450/mo.

A giant-sized, 16M-byte, 16-channel system will command $94,750/mo on a two-year lease and $80,250/mo on a four-year lease.

Monthly maintenance prices for a 12-channel machine range from $9,500/mo for the 4M-byte system through $11,400/mo for the 8M-byte system to $15,200/mo for the 16M-byte system.

Maintenance for a 16-channel processor starts at $10,000/mo for the 4M-byte configuration, rises to $11,900 for the 8M-byte system and goes up to $15,700/mo for the 16M-byte processor. All maintenance charges are for 168 hour/week maintenance, the firm stated.

Gaining 370/158 Power

The accelerator announced by the firm is said to provide the additional power of an IBM 370/158, available through a simple console command. Intended primarily for users with peak load problems, the device will be available only on rental; for $1,800/mo. That price includes 20 hours of use per month, with additional hours billed at $90 each.

The device is intended for the 470V/5, V/5-II and V/7A only. First shipments for attachment to the two smaller processors are scheduled for October, with December set as the shipping date for the V/7A.

There will be no additional charge for maintenance on installed accelerators, the firm stated, and having the device installed does not affect normal maintenance procedures on the host system.

Limited Availability

The device is being limited to the 470V/5 and the V/7A to persuade customers with other systems to purchase upgrades, rather than try to accelerate them, according to the spokesman.

The accelerator will enable a 470V/5 to perform like a V/6 — an increase of 40% to 50%, the spokesman said. With an accelerator installed on a 470V/5-II, users can get performance approximately equal to a V/6-II, again an increase of 40% to 50%, Amdahl claimed.

However, the performance of a 470V/7A with an accelerator is only increased 20%, which would then approximate the power of the firm's V/7.

The accelerator is installed within the existing 470 system, the firm said, and requires no extra floor space. It is turned on and off with an operator command, and usage is recorded only when the user is in that mode and the system is active, not for all elapsed time.

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Southern California Users Warned on 80° Limit

By Jeffry Beeler
CW West Coast Bureau

LOS ANGELES — Like their counterparts in the northern part of the state, users in southern California could soon find themselves without electricity if they continue to set their air conditioner thermostats below 80° this summer.

Southern California Edison Co., the utility serving the Greater Los Angeles area, has joined northern California's Pacific Gas & Electric Co. (PG&E) in warning that it might halt the flow of power to consumers who refuse to raise their air conditioner thermostats to 80° or higher [CW, July 23].

Edison requested the 80° minimum thermostat setting last month as part of a statewide effort to husband California's dwindling power reserves, according to the utility's energy conservation chief, Fred Mickelson. The request will stay in effect through October.

In southern California, as in the northern part of the state, DPers enjoy no automatic exemptions from the 80° limit and could face severe hardships if they defy the guidelines. Fortunately, compliance with the 80° rule is expected to damage little if any hardware, although it will undoubtedly affect the physical comfort of some DP personnel.

Almost all the equipment in IBM's 370 family, for example, can operate at temperatures well above 80° with no noticeable ill effects, according to a company spokesman and a sampling of the firm's product literature. The 370 series CPUs themselves can withstand operating temperatures as low as 60°F and as high as 90°F, with relative humidities ranging from 20% to 80%.

The same environmental conditions characterize the 3330-1 and 3330-11 disk units; the 3333-1 and 3333-11 disk units; and the 3420-3 and 3420-8 tape units, IBM said.

As for some of IBM's printers, the story is much the same. Both the 5203/3 and the 3262 line printer can operate at 60° to 100° with 8% to 80% relative humidity, while the 3800 printing subsystem can tolerate temperatures ranging from 60° to 85° and relative humidities ranging from 20% to 80%.

A spot survey of several other medium- and large-scale systems vendors found that competitive CPUs and peripherals can survive basically the same range of temperature and humidity extremes as their IBM counterparts.

Route to Exemption

But if, in spite of these findings, a user department still fears an 80° limit might somehow harm its hardware, the organization can write to the California Public Utilities Commission (CPUC) in San Francisco and apply for an exemption from the regulation.

If a request for exemption is accepted, the commission will permit the user to set its air conditioner thermostat below 80°, according to George Amaroli, chief of the CPUC's energy conservation branch.

Like PG&E, Edison is urging its consumers to abide voluntarily by the 80° minimum setting. When asked whether his company is conducting unannounced spot checks of its customers' air conditioner thermostats, Mickelson claimed not to know.

"But we do conduct a couple thousand scheduled audits a month," he noted, "and each time we do an audit we check the customer's thermostat."

Under most circumstances, Edison will not monitor compliance to the 80° setting unless a suspected violation is first reported to Mickelson's office. If the utility does receive a complaint, however, investigators visit the offending customer and ask it to turn up its air conditioner thermostat to the required level.

To date, only a "handful" of violators have been reported to Edison, and without exception the violators complied with the 80° limit after just one warning, Mickelson said.

Warning Procedure

If its first warning did go unheeded, however, the utility would mail a written notice giving the offender five days to abide by its conservation measures.

If the customer still defied the 80° limit at the end of five days, Edison could begin legal proceedings that lead to a cut-off of all electrical service, Mickelson warned.

The need for a united front in combating the state's power shortage is being dramatized almost daily here as soaring demand for commercial and residential air conditioning is placing a continuing strain on Edison's meager reserve capacity.

At present, reserve levels are averaging a relatively comfortable 12% to 15%. In June, however, capacity sank below 5%, and consumption on June 12 totaled a record 12,221 MW — a 1.9% increase over the previous record set in 1978.

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Man Who Admitted Billing Scheme Kills Self

By John Whitmarsh
CW Staff

HAUPPAUGE, N.Y. — A former chemical salesman who pleaded guilty to running a minicomputer-based false billing scheme put a gun to his head and pulled the trigger just moments before final sentencing in the State Supreme Court building here last week.

Larry A. Glassner, 34 and the father of four children, died July 30 in a third-floor men's room outside the courtroom after he shot himself in the mouth with a .38 caliber revolver.

Glassner had pleaded guilty in June to one count of grand larceny in the third degree for running a false billing scheme that bilked an estimated $1 million from victims in all 50 states.

He had been free on bail since his arrest last Dec. 23 following a three-month investigation.

The investigation was sparked by a suspicious city attorney in Richland Hills, Texas, who received a bill for supplies he had never ordered or received.

Glassner apparently ran two "semilegitimate" supply companies from his home, according to a spokesman for Suffolk County (N.Y.) District Attorney Patrick Henry. The investigation revealed that municipalities in all 50 states had received bills from Glassner in the two years the scheme is alleged to have gone on. The majority of victims were small towns that received and paid small bills, the spokesman said.

Records Stored on Micro

Though Glassner apparently had no computer background, he stored his business records on a Radio Shack TRS-80 microcomputer equipped with a CRT terminal, line printer and 70K-byte capacity disk. The micro and peripherals had been obtained fraudulently, according to the district attorney's office.

Glassner, who was on probation for mail fraud when he devised the billing scheme, appeared in court last week for sentencing with his uncle and attorney, Richard Glassner. During the proceedings, Acting New York State Supreme Court Justice Joseph Jaspan allowed Glassner and his attorney to read his probation report. Citing Glassner's previous conviction, the report recommended a four-year jail term for the billing scheme.

"It was at that point that Glassner and his attorney asked for a brief adjournment of sentencing," according to the district attorney's spokesman. "Glassner went out to the men's room near the courtroom in the Dennison Building and was in there about 20 minutes.

"About 10:55 a.m., a *Newsday* reporter went into the men's room to check on him, and Glassner told him to get out and mind his own business.

"The reporter walked out of the men's room, took five steps and heard the shot. He and a detective raced back in, opened the door of the stall and found Larry Glassner had committed suicide."

On Anniversary of Imprisonment

U.S. DP Scientists Ask Sharansky Release

NEW YORK — Twenty-eight American computer scientists recently petitioned Soviet President Leonid Brezhnev to release computer scientist Anatole Sharansky from prison, because of his deteriorating health.

The 28 scientists sent a cable to Brezhnev on the first anniversary of Sharansky's imprisonment on a charge of treason. Sharansky, who had been active in the refusnik movement in the Soviet Union, was sentenced by a Soviet court to three years in prison and 10 years at hard labor for conspiring with the U.S. Central Intelligence Agency [CW, July 24, 1978].

In a recent letter to his mother, Sharansky said his eyesight is failing and he has difficulty reading and writing. The U.S. scientists contended he would receive better medical care outside of prison.

Although no real response is expected from the cable, the Committee of Concerned Scientists, Inc., to which the 28 belong, believes action of this kind will pressure the Soviet government to release Sharansky eventually.

Among the 28 who sent the cable are Nobel Laureate and Turing Award winner Herbert A. Simon; Turing Award winners John Backus, Allen Newell and Dana S. Scott; two past presidents of the Association for Computing Machinery (ACM), Dr. Herbert Grosch and Anthony Ralston; and the current ACM president, Dan McCraken.

Independent Packages Go With DOS/VSE

(Continued from Page 1)

the 4300 hardware and the DOS/VSE software, ADR obtained detailed technical materials from IBM, including Program Logic Manuals and microfiche for VSE, the VSE Advanced Functions and the VSE versions of the Power spooling system.

Although ADR is a participant in the Software Information Exchange with IBM [CW, July 16], Caughey said his company got the technical information "through normal channels, but only after considerable badgering" of IBM, including help from the Association of Data Processing Service Organizations (Adapso).

After analyzing the IBM documentation, ADR began to reprogram the affected areas of The Librarian and Vollie and to test the changes, to the extent possible, on an IBM 370/138 under DOS/VS/Power.

Concurrent with this preliminary work, other ADR staffers began a search for a suitable test site. ADR had both a 4331 and a 4341 on order, but delivery isn't expected until mid-1980.

Unable to locate a domestic ADR customer site scheduled for early delivery of the 4300 systems — largely because IBM limited its early delivery program to "solid blue" shops that had no non-IBM hardware or software — ADR turned to its overseas subsidiaries for help.

ADR/Germany found a manufacturing firm near Munich, already a user of The Librarian and Vollie, that agreed to host the tests. The German firm took delivery of its 4331 — Serial No. 17 — and DOS/VSE in April and had it in production in June.

Four ADR technicians from the Princeton development center arrived during the last week of June. Working days and evenings, they succeeded in getting the ADR products operational in five days. However, several problem areas were encountered.

Most of the problems resulted from inconsistencies between microfiche descriptions and the actual formats of certain VSE files and tables, Caughey reported. Interim solutions were found, and both The Librarian and Vollie were functioning well at the time of the ADR technicians' departure.

VSE/ICCF Experiment

During their visit to the user site, the technicians had the opportunity to experiment with the Interactive Computing and Control Facility (VSE/ICCF). From a user point of view, it appeared to be very similar to Extended Time Sharing System (ETSS II), an IBM Field-Developed Program already available to DOS/VS sites, Caughey commented.

Generating the VSE software was perhaps more conventional than ADR's technicans would have liked.

Neither the Installation Productivity Option/Extended (IPO/E) tape — which is a customized copy of the operating system and supporting software components — nor the Interactive Productivity Facility (VSE/IPF) — intended to simplify the loading of the individual components from the IPO/E — were available. But of course, they weren't even scheduled to be ready, Caughey pointed out.

Built-In Changes

ADR plans to build changes into its software to circumvent incompatibilities between DOS/VS and VSE. The Librarian and Vollie are expected to be fully adapted by the time shipments of the 4300/VSE systems begin arriving at ADR customer sites.

Implementations of other ADR products for the VSE setting are expected to be operational shortly thereafter, Caughey said.

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Several Agencies Attack Automation of INS

(Continued from Page 1)

ducted an investigation that found the INS program to be ineffective and proceeding without necessary GSA and Justice Department authorizations.

The one point of agreement in the bureaucratic skirmish is that INS is in great need of help. The agency has been described by various members of Congress as "a morass," "the slowest of all agencies" and "totally incapable of administering and enforcing the provisions of the Immigration and Nationality Act."

However, Subcommittee Chairman Richardson Preyer (D-N.C.) told Castillo, the panel wants to make sure sound management practices and procedures are followed before it approves the long-range project. Preyer appreciates the "horrendous problems" INS faces in modernizing its operations, but "we want to make sure that before we take a big, $25 million leap in the dark, we know where we're going."

Reason for the Controversy

The controversy arose when INS expanded a model automation project based in the Houston office to four other regional offices. Subcommittee investigators reported that the Houston project was not completely successful, and Justice Department and General Accoonting Office (GAO) studies concluded INS was not authorized to purchase minicomputers for the other four offices.

Castillo assured the subcommittee that the Houston office is now functioning smoothly. He further argued that good, long-range planning had been done even if INS did not follow federal procurement guidelines to the letter.

INS performed complete cost and feasibility studies, tested system prototypes and conducted fully competitive bidding, he said. A complete planning process carried out in accordance with the Office of Management and Budget Circular A-109 on large systems acquisition would have taken several years, he contended, and the backlog at INS offices is too severe to follow every step of that process.

Recounting the history of the project, Castillo told the subcommittee that in 1977 INS installed a Raytheon Data Systems Co. 1200 minicomputer in the Houston office and began development of an Integrated Case Control System (ICCS) that tracks files, provides case status, schedules cases, generates management data and interfaces with word processing equipment to produce forms and letters.

Once the Houston operation proved feasible and was successful in resolving a large backlog problem, Castillo said, four additional minicomputers were acquired for INS offices in Los Angeles, Boston, Newark, N.J., and Washington, D.C. The results have continued to be very encouraging, Castillo and field office officials said.

After investigating the Houston experiment, however, the Justice Department and GAO concluded ICCS has not been successful enough to warrant expansion without further testing and planning.

Walter L. Anderson, senior associate director of GAO's Financial and General Management Studies Division, told the July 23 hearing that INS did not follow federal property management regulations and federal procurement regulations in acquiring the additional four minicomputers.

Furthermore, Anderson said, "With respect to Department of Justice regulations, the INS did not get required advance approval for the individual sole-source lease of the minicomputers . . . .

"As an overall comment, a major defect [in the ICCS concept] is that the INS lacks a long-range [DP] plan that would ensure that the development, expansion or implementation of its automation program would go forward without unnecessary expense or grief."

Castillo argued, however, that "we know what we want to do and what we need to do it."

Users Still Not Safeguarding Privacy

(Continued from Page 1)

U.S. corporations.

"With reference to giving the employee a right to see, copy and correct, if necessary, his records, we found that although three-fourths (76%) of the companies allowed the individual to have access to the personnel records, less than half (46%) gave the employee the right to copy the record.

"For supervisor's records, it was 16% that gave access, and only 9% allowed copying," Linowes reported.

"Most employees still are not being told much about their own records. Over two-thirds of the companies do not inform their personnel of the types of records maintained on them, how they are used, what they have access to and what the companies' routine disclosure practices are. Apparently, secret records do continue to exist."

"Two-thirds (69%) of the corporations do not inform the individual that they give personal information to credit grantors. . .

"Over eight out of 10 companies verify or supplement background information collected directly from their personnel, but only one-fourth of these companies let the individual see this information . . .

"Three out of four companies use medical information in their files to make employment-related decisions. Yet 83% of the organizations do not allow their personnel to see it . . .

"Two out of five (41%) companies do not have a policy concerning which records are rountinely disclosed to government agencies. When no such policy exists, the person in charge — whether he be an executive or a record clerk — decides for himself what and when sensitive personal information is routinely released . . .

"Regrettably, these findings hardly add up to widespread voluntary adoption of privacy safeguards in employment systems of the largest corporations in the nation," Linowes said. "This, in spite of the fact that almost four out of five companies indicated that they had appointed an executive-level person to be responsible for maintaining privacy safeguards in employment records."

Linowes noted that President Carter recently endorsed the privacy commission call for voluntary action by industry. Linowes suggested, however, that national legislation to ensure employee record privacy may be necessary.

FCC Eyes Ecom Regulation

(Continued from Page 1)

However, research, development and testing of "electronic message technology applications on an experimental basis" are allowed, and existing contracts — such as the one between the Postal Service and Western Union to develop Ecom — would not be abrogated.

Earlier, the House approved funding bill for the Postal Service without any mention of EMS. The final version will have to be worked out in a Senate-House conference committee.

New Questions

New questions have arisen in the Ecom proceedings being conducted by the U.S. Postal Rate Commission. It has requested comments from interested parties on the potential privacy and security hazards posed by Ecom and on the impact of the Carter Administration's recent policy statements concerning electronic mail [CW, July 30].

Specifically, the Postal Rate Commission wants to know whether the Administration statement is likely to change the Ecom offering and whether individual privacy is threatened by "the access which postal employees may have to the text of Ecom messages."

Last Wednesday's 5-1 FCC vote requires the Postal Service to file a Section 214 application, requesting commission authorization of Ecom communications facilities, before the service can be offered commercially. The whole question of Ecom's market impact on competing EMS services offered by commerical suppliers will be argued as a result. Although this question has already come up at the Postal Rate Commission, industry observers regard the FCC as a more knowledgeable tribunal.

Cloud Over Intelpost

The FCC vote cast a cloud over Intelpost, the international facsimile service now being tested by the Postal Service. As one industry source put it, "Since Intelpost makes essentially the same use of communications facilities that Ecom does can [the Postal Service] is the supplier of both services, the commission can hardly not require a 214 application in one case and forego it in the other."

An FCC source, however, said "internationa political considerations" could lead to a different result in the Intelpost case.

Assuming the FCC does assert jurisdiction over Interlpost, it would become the sole regulator of the service since the Postal Rate Commission, under its charter, supervies only domestic mail activities.

Another significant aspect of the decision is that the FCC asserted jurisdiction over end-to-end Ecom service, including the rates charged for carrier delivery of Ecom messages after they have been transmitted to the receiving post office. Significantly, the Carter Administration, in its recent policy statement, assigned exclusive jurisdiction over this portion of the service to the Postal Rate Commission.

Two Choices

An FCC source said the Postal Service now has two choices. It can appeal last Wednesday's decision to a federal court, or it can ignore the decision and proceed to offer Ecom commercially.

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Inspection Finds 2,000 Files in Box

INS Automation: No One Disputing Necessity

By Tom Henkel
CW Staff

WASHINGTON, D.C. — When government inspectors waited three hours for two files from the Immigration and Naturalization Service (INS) — the files couldn't be found — INS officials decided something had to be done.

The agency, which even its commissioner, Leonel J. Castillo, admits is one of the worst with which to do business, recently decided to computerize its operation. Using Raytheon Data Systems Co. 1200 minicomputers, INS implemented the Integrated Case Control System (ICCS) with a Master Index Remote Access Capability (Mirac) at five experimental sites.

Computerization was about 15 years overdue, one INS official said. The result was an agency so swamped in paperwork that it could barely manage trivial tasks.

In a recent report submitted to the Government Information and Individual Rights Subcommittee of the Senate Committee on Government Operations, Castillo said INS was in such bad shape that something had to be done fast.

"I inherited an agency that was foundering," Castillo, who was appointed commissioner in May 1977, said. "It could not meet its responsibilities of enforcing the law or providing service to the public."

Unfiled, Lost Files

A May 1978 inspection of the Washington, D.C., INS office turned up 2,000 files in a box in the file room — files that were charged out but never refiled. Some of them were five months old:

A random sampling of 200 files in various places in the Washington office revealed that about 20% were never charged out or were charged out improperly. In addition, the inspectors found more than 200 unanswered congressional letters — some more than a year old, according to Castillo.

A similar inspection of the Newark, N.J., district office five months earlier had turned up similar problems, he added.

A February 1973 study of the Washington INS office showed one file in 20 was lost. According to that study, it took an average of three months to find a lost file.

"It seemed essential that action be taken quickly to enable INS to carry out the responsibilities assigned to it by Congress. The agency did not need a long examination of its problems followed by a long period of planning. The problems were obvious," Castillo said.

"A process of exhaustive testing, evaluation and study combined with the long lead times inherent in the budget process would have resulted in no significant action being taken to remedy INS' problems for several years."

Houston Test Site

Instead, INS decided to go ahead and develop its system at its office in Houston. Using both local and central office personnel, INS developed ICCS and Mirac.

ICCS uses two basic subsystems, an Alien File Tracking System (Afts) and an Application and Petition Tracking System (Apts). Apts keeps track of the contents and status of files, while Afts tracks files within a district office.

A subsystem to establish a data base of deportation cases is being developed.

To keep track of files on a national level, INS developed Mirac. Using Hazeltine Corp. 1500 terminals linked via telephone lines to a central IBM 360 CPU in Washington, local offices can check the status or location of any file and request transfer of that file to another office, according to Castillo.

Future Expansion

INS eventually plans to expand the system to produce electronic abstracts of files. This would eliminate the physical transfer of files from one office to another. INS will set aside $200,000 from its 1980 budget for the expansion, according to Castillo.

INS is also using the experimental system to interface with word processing machines to produce reports and form letters, he added.

The experimental INS systems are at the Houston, Washington, Boston, Newark, N.J., and Los Angeles.

Miller Named To DPMA Board

PARK RIDGE, Ill. — Dr. Georgia B. Miller, acting head of the Administrative Systems Department of the Indiana University School of Business, was recently elected to the Data Processing Management Association's (DPMA) Education Foundation Board of Regents.

Miller holds a doctorate in business education and accounting from the University of Kentucky. She taught at Western Kentucky University before coming to Indiana University.

Miller succeeds T.M. Bellan, vice-president of computer services for McDonnell Douglas Automation Co., on the board.

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WASHINGTON, D.C. — Keith W. Uncapher, chairman of the American Federation of Information Processing Societies, Inc. (Afips) Washington Activities Committee, has received the Afips Distinguished Service Award.

Established by the Afips board in 1970 and presented to Uncapher at a plenary session of the National Computer Conference in June, the award is given "to recognize outstanding individuals who have rendered extraordinary service to the computing field through their accomplishment on behalf of . . . [Afips] and its committees."

Uncapher is founder and director of the Information Sciences Institute, an information processing research center at the University of Southern California in Marina del Rey. At the Rand Corp. from 1950 to 1972, he was associate head of the Information Science and Mathematics Department, head of the Computer Systems Group and program manager.

He is currently a member of the U.S. Air Force Scientific Advisory Board, the Defense Communications Agency Scientific Advisory Group and the Federal Judicial Center Systems Advisory Council.

Uncapher became involved with Afips in 1961 as vice-chairman of the Fall Joint Computer Conference, the predecessor to NCC.

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U.S. Economic Climate Stifling Small, Innovative Firms: Norris

By a CW Staff Writer

WASHINGTON, D.C. — The entrepreneurial spirit and willingness to take risks that spawned business boom "towns" such as "Silicon Valley" in California are being buried under stifling government regulation according to Control Data Corp.'s William C. Norris.

Norris, CDC chairman and one of the most successful entrepreneurs in the electronic industry, told a House of Representatives joint committee meeting July 23 that the technological innovation of small, start-up firms is one of the best checks against inflation.

The House Science, Research and Technology Subcommittee and the Budget Committee's Task Force on Inflation called the joint hearing to explore the relationships between research and development, productivity and inflation.

Incentives Reduced

In a prepared statement, Norris told the committee members that the present slowdown in U.S. productivity "is due in large part to certain federal and corporate policies that have reduced incentives for business to innovate." These policies are making it very unattractive, if not very difficult, to start up small, innovative companies that are the wellspring of new technology, he said.

"The environment in large companies is not conducive to innovation. Most large companies create a corporate bureaucracy that avoids risk wherever possible. The rising cost of innovation, investor pressure for immediate earnings and greater uncertainty of an unstable economy have accentuated the tendency of large corpotations to avoid the risks associated with truly major innovative products and services.

"The emphasis today is on immediate payoffs from marginal improvements in existing offerings and from lower costs of labor through mechanization and automation. In this environment, development of new products and services takes a back seat.

Taking Risks

"In contrast," Norris said, "there are many small, technically oriented companies where management is entrepreneurial rather than bureaucratic. Here, developing ideas and innovations in useful products and taking big risks are a way of life."

The chief executive officer pointed to his own experience in starting CDC in 1957 with about 20 employees. The company is now a multibillion-dollar operation employing more than 50,000.

Unfortunately, the entrepreneurial achievements that built the Silicon Valleys of the 1950s and 1960s are not possible in today's business climate, Norris said. He blamed "federal policies of the last decade, such as increases in capital gains taxes and more burdensome regulation, (which) have inadvertently reduced the incentives for undertaking the relatively high-risk investments that are inherent in producing and marketing new products and services."

Realizing Potential

What is needed, he said, "is the recreation of a business climate in which small firms can realize once again their innovative potential." To that end, he put forward a number of proposals including:

- Reducing capital gains taxes to 25% for firms employing 100 to 500 workers and to 10% for firms with fewer than 100.
- Deferral of capital gains tax if proceeds from stock sales are reinvested in small business.
- Raising the threshold for application of the full corporate tax rate to $200,000 for small businesses.
- Increasing the carry-forward provision for start-up losses of small business from five to 10 years.

He also recommended a government program to encourage transfer of government and university technology to the private sector for commercialization and called for "tax incentives to be used to encourage large companies to make their technology available to small companies."

Norris advocated a program "to stimulate the startup of millions of new businesses" and curbs on takeovers and mergers, through which, he said, large companies acquire small ones to be rid of the competition small, innovative firms offer.

Report Focuses On Particulars Of Maintenance

PENNSAUKEN, N.J. — An analysis of computer maintenance vendors and equipment is offered in Alltech Publishing Co.'s *Maintenance Considerations in the Business Automation Marketplace.*

Originally part of Alltech's 1978 marketing study of computer maintenance, the analysis is now being offered as an individual report. Included in the package are an analysis of 142 maintenance and equipment vendors, a directory and analysis of third-party maintenance firms, user evaluations and a report on how maintenance personnel affect sales, according to Alltech.

The report costs $2,000 ($1,995 if prepaid), the vendor said from 212 Cooper Center, N. Park Drive and Browning Road, Pennsauken, N.J. 08109.

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Let Federal Contractors Retain Patent Rights, EIA Head Urges Senate

By a CW Staff Writer

WASHINGTON, D.C. — Federal contractors should be permitted to retain patent rights for inventions resulting from federally sponsored research and development, an electronics industry spokesman said here recently.

Addressing the Senate Subcommitte on Science, Technology and Space, Peter F. McCloskey, president of the Electronic Industries Association (EIA), called for a uniform federal patent policy that would encourage contractor participation in government R&D programs.

"Placing title in the contractor for inventions under federally sponsored R&D — and doing so uniformly for all agencies — can only work to assure broader contractor participation, a higher quantity and quality of innovation and and attendant flow down to the American consumer of the benefits from commercialization of those inventions," The EIA executive said.

Creating Disincentives

The Senate panel is considering the proposed Science and Technology Research and Development Utilization Policy Act [CW, July 2,9]. McCloskey was asked by subcommitte chairman Adlai Stevenson (D-Ill.) — to address the question of how present federal patent policy inhibits joint government-industry R&D.

In his prepared testimony, McCloskey said the EIA endorses the legislation, S.1215, and praised it for focusing attention on "two vitally important points.

"First, those existing agencies with a policy calling for the government taking of title in all cases lessen the incentive to subsequent commercialization which would otherwise be present if the contractor held the patent.

"More importantly, however, the taking of title by the government in those cases traditionally is accompanied by attempts to make rather significant demands on the so-called background rights and patents of the participating contractor. This valuable know-how, involving proprietary information in many cases, was initially developed by the contractor at private expense . . . .

"To ask a company to give up some of this know-how unnecessarily in order to undertake a federal R&D project raises a difficult judgment question. Ironically, the most successful firms — the best innovators — are faced with giving up more of this valuable background technology.

"This penalty then becomes a greater disincentive to these firms. What results is a dichotomy that those with the most to contribute to the federal R&D effort face the greatest disincentives."

Looking Beyond Theory

McCloskey, who said his association is aware of instances in which federal agency title policy "was sufficient disincentive to cause a contractor not to participate," asked the subcommitte to look beyond the "theoretical and somewhat doubtful considerations" on which such policy is based.

He asked the subcommitte not to draw any distinction between military and civilian inventions, noting that "an invention in one area may find greater use in yet another area."

McCloskey also criticized proposals for different policies for allocating patent rights to large and small firms and the policy requiring a payback to the government for federally sponsored inventions.

"If the invention of the federal patent policy is to draw upon the talents of the best contractors and technology, then the theory of increased participation derived by leaving title in the contractor would apply equally to all sizes of firms," he said.

In addition, "it is extremely impractical, if not impossible, to determine what particular revenue or return is generated from a specific patent — considering that the patent may be used in combination with other patents or know-how or in licensing packages," he said.

NBS Proposes Adoption of Fortran, Basic Standards

WASHINGTON D.C. — The federal government has proposed the adoption of the Fortran and Minimal Basic language standards promulgated by the American National Standards Institute (Ansi) for government use.

In a July 20 notice in the *Federal Register*, the National Bureau of Standards (NBS) requested public comments on its proposal to adopt as Federal Information Processing Standards Ansi Fortran X3.9-1978 and Ansi Minimal Basic X3.60-1978. NBS is responsible for developing DP standards for federal use.

The technical specifications for the two languages can be obtained from the American National Standards Institute, 1430 Broadway, New York, N.Y. 10018.

Comments on the NBS proposal should be submitted by Sept. 18 to the Office of ADP Standards Administration, Institute for Computer Sciences and Technology, National Bureau of Standards, Washington, D.C. 20234.

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Asis Meet Set

MINNEAPOLIS — The American Society for Information Science (Asis) will center its 42nd annual meeting here Oct. 14-18 on the theme of "Information Choices and Policies."

Designed to examine aspects of worldwide communications and information exchange in the next decade, the meeting will feature sessions on computer graphics, occupations of information professionals, co-citation analysis and personal computing.

Conference fees are as follows: member preregistration, $70; nonmember preregistration, $100; on-site registration for members, $90; on-site registration for nonmembers, $120; one-day member attendance, $30; one-day nonmember attendance, $40; spouses, $5 for the complete conference; student members, free.

Asis is located at 1010 16 St. N.W., Washington, D.C. 20036.

DP Means Rehabilitation at Milan

By Patrick Leo Sharkey

Special to CW

MILAN, Mich. — "Rehabilitation" is the kind of flowery word that is hardly ever used at the Federal Correctional Institution (FCI) here, a medium-security prison on the outskirts of a small town 45 miles southwest of Detroit.

Yet the Education Department's efforts to upgrade and broaden the learning of the inmates and to give them marketable skills — most notably associate degrees in DP — have resulted in its becoming the first prison school in the U.S. to receive North Central Association (NCA) accreditation.

That NCA seal of approval means two things, according to Bruce Baker, assistant supervisor of education. "We haven't been doing anything that new," he said, "but now people are starting to recognize us." An NCA committee will annually evaluate the prison's Education Department to check that it is maintaining its level of quality education and, most beneficial to the inmates, employers in the outside world will now tend to give more serious consideration to applications coming from prisoners who have completed the accredited program.

In DP alone, according to program head Paul Breitenbach, 10 to 12 parolees this year will find jobs as programmers. He said he receives a call at least once a month from former students who tell him about the raises they have already received from their usual $15,500 starting pay or just chat about the enjoyment they're finding in the first actual career of their often directionless lives.

Employers also call Breitenbach to say what fine technicians and prompt, ambitious workers his alumni are proving to be, he said.

The Education Department has managed to involve 428 of Milan FCI's 600 inmates in programs ranging from DP and a college business curriculum to vocational training and adult basic education. Thirty-six of those men have enrolled in the computer program.

Carrying notebooks and penciled-over computer sheets, the students arrive at the cluster of paneled and carpeted computer rooms early in the morning. As they wait for the class day to begin, they often talk about the programming jobs they have their eyes on in cities across the country or about the headache a current program assignment has been giving them or just question aloud why Fortran is required of someone who is going into a business career.

Dealing With the Stigma

All the hopes and anxieties of college life abound here. But the inmate going to school has particular fears about what the world holds beyond college. "With the stigma of being an ex-offender," Breitenbach said, "it's hard to go out and apply for jobs."

Some omit this shameful chapter of their past on their applications, only to be fired or suffer a substantial salary penalty when their record has been discovered. "Personnel agencies call me up and tell me to cover up the prison part," Breitenbach said. "That's what they've been doing all along, and they want me to do it too. But I won't.

"I tell the guys to always think about the old antagonist you had to live with in prison who just might be working out in the plant where you're at and he sees you walking with the management people. Well, he hates the management and he hates you, too, so he'll blow the whistle on you."

"We used to type 'Arkona Road School' on the diplomas," Baker said, "but there's really no point to gloss over it. You get fired not for being an ex-offender, but for hiding it. You have to accept the fact that you're going to be an ex-offender for the rest of your life."

No Problem With Jobs

For all their worry, however, one-third of Breitenbach's students will have jobs waiting for them by the time they are released. Another substantial number, he said, will receive jobs soon after their parole. One reason — the Milan FCI grads are in demand.

"The advantage these students have over someone going to school on the outside is that they have about six months' industrial experience by the time they're finished," Breitenbach explained. One student with five months' experience and the credit for writing a JCL program, for example, left Milan last week for a middle-level programming position in Indiana.

Since all inmates are required to perform work while at the FCI, many DP students are involved in a vast programming project under contract with the U.S. Department of Agriculture to write programs analyzing the eating habits of the American public. "We take the answers to questions like 'How many yellow marimbas did you east last week?' and break them down to their nutritional value, then make cross-references to incomes or family size, things like that," Breitenbach said.

Under the contract, the Education Department at Milan was able to receive in January a substantial update in computer hardware. Discarding an old Univac 9200 with its low 24K memory and slow card input, Milan acquired a Raytheon Data Systems Co. PTS-1200 Mark II with an effective 128K memory, five CRT terminals, three hard-copy terminals and a communications link through a 4,800 bit/-sec dedicated line to a Honeywell, Inc. Level 66 Model 80 multiprocessor in Kansas City. It also received six Commodore Business Systems, Inc. PET 6502 microprocessor systems and three electronic keypunches.

The DP curriculum at Milan FCI emphasizes Cobol, but in the sequence of courses that leads to an associate degree, the student also encounters Basic, Fortran and the 6502 microprocessor machine language. "They get a whole course in Fortran, mainly to learn the number-crunching ability of the computer," Breitenbach said.

Sharkey is a freelance writer living in Saline, Mich.

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Although Gas Crisis Abating

Houstonians Still Flocking to Car Pool System

By Tim Scannell
CW Staff

HOUSTON — Although gasoline lines and odd-even fuel ration plans seem to have disappeared, energy-conscious commuters here are still flocking to join a computer-based car pool system set up by this city more than four years ago.

"As are all car pooling programs throughout the nation, we're having our share of calls and a lot of interest in the program at this time," Sharon Hagen, manager of Carshare, stated. But "we have been here since 1975, and we've been servicing a number of people who are interested in car pooling — whether or not there is a gasoline shortage — just because of the amount of money they could save."

Offered free to commuters by Houston's Metropolitan Transit Authority (MTA), Carshare presently has between 8,500 and 9,000 active subscribers and is used by nearly 300 companies "during the course of a year," Hagan explained.

Like other rider-sharing systems around the country, the MTA program matches travelers according to the statistics contained on a special application each sends to Carshare. The application lists the subscriber's name, address, telephone number, work location, departure and arrival times and whether the applicant prefers to drive, ride or alternate between the two.

The applications are processed with a recently acquired Datapoint Corp. 5500 minicomputer system. "We would then generate the match list and the list would contain the [names of] people in [a subscriber's] area who are going to the same work area, and we mail that out," the Carshare director explained.

System Extra

However, the Houston system carries the car pool idea a step further by offering an almost instantaneous matching of drivers and riders. If a commuter's car is stolen or breaks down or if another kind of emergency strands the motorist, the subscriber can call up the service and be given the name of another driver over the telephone.

Unfortunately, even the best laid plans of gas-saving commuters are sometimes plagued with unavoidable problems. Several weeks ago, at the height of the gas shortage, Carshare was flooded with so many calls and applications that its emergency matching system was virtually nonexistent and the regular mail matching program was delayed by days and weeks.

"We were right in the midst of Houston's [gas] crisis," Hagan recalled. "The panic button had been pushed and we were getting up to 160 calls a day. We were not able to do the instantaneous match because it takes a few minutes to take down the information and to keep people on the phones." In addition, the MTA's commuter office didn't have enough telephone lines to accommodate the surge of calls.

Although it's not in the transit authority's 1979 budget, the MTA plans to add more phone lines and an additional terminal to the Datapoint computer to prepare for future commuter crunches.

Now the calls are "kind of what I would consider to be subsiding," Hagan continued. "We're catching up with everything and we'll be able to deal with each person."

Purging Program

In fact, to keep the system up-to-date and cut down on matching delays, Carshare personnel are about to conduct their almost semiannual purge of those names that have been on file for the past several months. The ejected commuters will then be notified that the computerized car pool service is updating its records and asked to change any data on their files that might have become outdated.

"Houston's a pretty mobile city and people change jobs very frequently," Hagan stated. "They move and they forget to tell us that they've moved."

While Carshare was initially started by the City of Houston, it is now under the jurisdiction of the MTA. This may seem to be a conflict of interest between public and private transportation systems but, according to Hagan, the MTA considers the program to be a necessary public service.

"The MTA system is not in the best of shape," Hagan admitted. "There have been numerous maintenance problems; the facilities are old, they're outdated and there's a lot to be done just to upgrade the existing system. In addition, the MTA has only 300 buses to serve the city's 1,500 square miles and nearly three million people."

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**Datamation* Reader Preference Studies, 1978, 1977, 1976, 1975
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Managers on the Move

JOHN G. STENGEL has been named assistant controller of Texasgulf, Inc., responsible for heading the corporate DP center in Raleigh, N.C.

Along with Stengel, FRANK HODGE was named manager, businesss applications development; TOM HONEYCUTT became manager, technical applications development; FRANK MOORE was appointed manager, Raleigh Data Center; and DAVE RUTLEGE was named manager, information systems planning.

Hodge

Moore

Stengel has been employed by Texasgulf for seven years. Prior to his promotion, he was manager of the DP center. A graduate of King's College in Wilkes Barre, Pa., he worked for Fairchild Camera and Instrument Corp. and for Western Electric before joining Texasgulf.

Hodge attended North Carolina State University and Upper Iowa University. He worked for both Wachovia Bank and Carolina Coach before joining Texasgulf in 1972.

Honeycutt came to Texasgulf from North Carolina State University, where he was an associate professor of computer science. He holds B.S., M.S. and Ph.D. degrees from North Carolina State in engineering and operations research.

Moore received his bachelor's degree from Manhattan College and did graduate work at Long Island University. He joined Texasgulf in 1971 after several years at Reader's Digest, J.C. Penney and Curtiss Wright Corp.

Rutledge has been employed by Texasgulf for five years. He studied chemical engineering at North Carolina State and is working toward a master's in business administration from Duke University. Before joining Texasgulf, he worked at Computer Management Corp. and Corning Glass in Raleigh.

• • •

Rutledge

Stengel

MICHAEL A. WIEDER has been appointed DP staff manager for GTE Service Corp. in Tampa, Fla.

In his new position, Wieder will be responsible for acquiring and disposing of all hardware as well as negotiating hardware-related contracts.

A graduate of Earlham College with a bachelor of science degree in physics, Wieder will receive his master's degree in business administration from Rider College later this summer. He has about 15 years' experience in DP.

• • •

ROBERT DOERFLEIN and THOMAS CONLEY have been named manager of data processing and manager of systems processing, respectively, at The Silent Watchman Corp. in Columbus, Ohio.

Doerflein will be responsible for all DP functions for the securities firm, including a nationwide computer-based monitoring operation that detects and reports break-ins and vandalism at subscribers' locations.

Conley will take charge of Watchman's program maintenance and operations functions, including management of the on-line monitoring, accounting and billing functions as well as inventory control and marketing information.

Doerflein joins Watchman after 10 years with Univac, where he was a senior systems analyst. He received a bachelor's degree in electrical engineering from the University of Cincinnati in 1964.

Previously, Conley was a systems representative for Honeywell, Inc. He is a graduate of columbus Technical Institute.

Honeycutt

Grosz

ANDREW GROSZ has been appointed manager of Southern California computer operations for the Wells Fargo Bank in Los Angeles.

Prior to his promotion, Grosz was operations officer for the bank's Production Control Services Department in San Francisco.

He joined Wells Fargo in 1971 after receiving his B.S. degree in psychology and art from Brooklyn College.

• • •

SIDNEY W. HALL has been named director of management information systems (MIS) for Hobart Brothers in Troy, Ohio.

Hall, who worked for ITT North Electric, General Tire and Bell telephone Labs, holds a B.A. degree in industrial management from Ohio State University and an M.S. in business administration from Akron University.

Other changes in the MIS department include the assignment of all systems and programming activities to MIKE BUNN, manager for business systems development, and the placement of data entry activities and computer operations and coordination of all remote DP equipment under CHARLES STANFORTH, DP manager.

Billed as First of Its Kind

System Monitors Use of Nuclear Materials

By Tom Henkel
CW Staff

LOS ALAMOS, N.M. — Keeping track of plutonium and 100 other radioactive substances here at one of the government's major nuclear research facilities is serious business. Researchers have developed a computerized inventory system that will monitor radioactive material anywhere in the laboratory.

Billed as the first of its kind, the experimental system, which has been in operation since January 1978 at the Los Alamos Scientific Laboratory, runs on a Data General Corp. Eclipse C330 minicomputer. Called the Dynamic Materials Accountability (Dymac) system, it tracks material in use, in storage or in transit.

In addition, much of the laboratory's testing equipment is tied into the system, preventing tests on material without updates to the data base.

Every time a technician does anything to the strategic nuclear material (SNM), he must enter a "transaction" into the system, according to John Ford, a programmer for the Q-3 Division of the laboratory, the division in charge of nuclear material.

Using a 15-field input to one of 34 transaction terminals, the technician enters his name and employee number, the amount of radioactive material he's using and how he plans to use it.

The 15-field system allows programmers to change portions of the standard transaction format without making major changes to the software, Ford said.

In addition to the initial transaction, the technician must also enter data into a "glovebox" before making tests.

Gloveboxes isolate the material in a protectd area where technicians can handle it with leaded gloves. The boxes are set up in rows, and each box is interconnected. An overhead conveyor inside the boxes ships SNM to various parts of the lab.

Invisible Boundaries

To implement the system, the Los Alamos laboratory was divided into 17 invisible acountability boundaries. If a certain amount of SNM stays within one boundary, it is not necesary to measure it.

However, if the radioactive material moves from one boundary to another via the conveyor — it must be measured, and an updated account of the amount of nuclear material present must be entered into Dymac.

When SNM is transported from one boundary to another, Dymac sets an arrival time. If the material does not arrive within that period an alarm is sounded.

To date, the alarm has only sounded as the result of failures to report receipt of the material, Ford said.

Transaction Check

After testing, technicians most account for the radioactive material used. Laboratory officials check all transactions against a master accounting report twice daily — once in the morning and again in the afternoon, Ford said.

Because a simple weighing of SNM is not an accurate way of determing the amount of nuclear material present, scientists must judge nuclear content by other methods. Nondestructive analysis is carried out on most of the 400 daily transactions. A more accurate chemical test is performed periodically, and the inventory is updated.

Close to Infallible

"It's not infallible," Ford said, "but it's close to it. When accounting discrepancies are discovered, laboratory officals must notify the government nuclear materials officer, who then starts an investigation.

"To date, the lab has not had a major discrepancy in its inventory."

"It used to be you only knew how up-to-date your inventory was about three or four weeks down the line. Now you know within five or 10 minutes," according to Dorothy Amsden, a technical writer for the Q-3 division.

"We started designing the system over three years ago, and we installed it last January" when the plutonium research labs moved to their current facility, according to Amsden. Before moving to the new building, managers of the operation used manual system to keep track of plutonium.

Currently, the system maintains only accounting functions. However, the laboratory plans to install a set of routines that will analyze transaction data to determine whether plutonium is being diverted via falsified reports, Amsden added.

The full DG system includes 34 transaction terminals, 30 laboratory instruments connected on-line and 20 others connected off-line. Amsden said the laboratory hopes to put all laboratory instruments on-line in the future.

The system also has 160K works of memory on two nine-track disk drives, according to Ford.

Afips Guide Catalogs Global Data Flow Laws

WASHINGTON, D.C. — A compilation of international laws and guidelines affecting transborder data flow is now available from the American Federation of Information Processing Societies, Inc. (Afips) here.

Selected Documents on Data Protection includes specific laws governing DP in Germany, France, Sweden, Norway, Denmark and Austria. It also covers the 1977 Canadian law, the Council of Europe Draft Convention and the Organization for Economic Cooperation and Development Draft Guidelines for April 1979.

Intended for those "interested in making the laws work or harmonizing with them," according to Afips, the 210-page guide costs $21 from Afips' Washington Office, Suite 805, 1815 No. Lynn St., Arlington, Va. 22209.

ACR Introduces Directory Of High-Level DP Execs

PHOENIX — Salespeople and marketing managers looking to improve their client base can buy a "Directory of Top Computer Executives" from Applied Computer Research, Inc. (ACR).

The 286-page book offers names, addresses and telephone numbers of top DP executives in business and government. Each of the 6,500 entries includes the company's name and the major mainframe installed at the site.

Updated twice annually, the book costs $75 for a single issue and $120 for both issues.

In addition to the directory, ACR will reproduce all or part of the list on pressure-sensitive or Cheshire format mailing labels. Special sections of the list organized by Zip Code, industry classification or make and model of the system are also available.

The directory can be printed on 3- by 5-in. index cards, on magnetic tape or as a computer printout.

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Calendar

Sept. 1-7, Stockholm, Sweden — **Data Kontor — DP/-Business Equipment.** Contact: Office of International Marketing, U.S. Department of Commerce, Room 4012, Bureau of Export Development, Washington, D.C. 20230.

Sept. 4-7, Washington, D.C. — **Compcon, sponsored by the IEEE Computer Society.** Contact: IEEE Computer Society, P.O. Box 639, Silver Spring, Md. 20901.

Sept. 5-6, Washington, D.C. — **Simulation: Tools and Techniques.** Contact: CACI, Vickie Carlton, 12011 San Vicente Blvd., Los Angeles, Calif. 90049.

Sept. 5-7, New York — **Fundamentals of Finance and Accounting for Nonfinancial Executives.** Contact: American Management Associations, 135 W. 50 St., New York, N.Y. 10020. Also being held Sept. 10-12 in Chicago.

Sept. 5-7, Chicago — **Computer Law Skills — A Practical Guide.** Contact: International Computer Negotiations, Inc., 1331 Palmetto Ave., Winter Park, Fla. 32789.

Sept. 5-7, Chicago — **Women in Management : Building Job and Life Management Skills.** Contact: American Management Associations, 135 W. 50 St., New York, N.Y. 10020.

Sept. 5-7, Chicago — **The Second International Fiber Optics and Communications Exposition in the United States.** Contact: Information Gatekeepers, Inc., 167 Corey Road, Brookline, Mass. 02146.

Sept. 5-8, Tokyo — **Info/Asia.** Contact: Clapp and Poliak, Inc., 245 Park Ave., New York, N.Y. 10017.

Sept. 6, Palo Alto, Calif. — **Invitational Microcomputer Exposition.** Contact: B.J. Johnson & Associates, Suite 203, 2503 Eastbluff Drive, Newport Beach, Calif. 92660. Also being held Sept. 26 in Minneapolis.

Sept. 7-9, Dallas — **International Microcomputer Exposition.** Contact: IME, 413 Carillon Tower, 13601 Preston Road, Dallas, Texas 75240.

Sept. 10-11, New York — **Time Management.** Contact: American Management Associations, 135 W. 50 St., New York, N.Y. 10020.

Sept. 10-12, Colorado Springs, Colo. — **The Corporate DP Function: How to Manage the Changing Environment.** Contact: American Management Associations, 135 W. 50 St., New York, N.Y. 10020.

Sept. 10-12, Philadelphia — **Computer Crime — Automated Fraud.** Contact: Infotech International, Inc., Suite 328, 234 E. Colorado Blvd., Pasadena, Calif. 91101.

Sept. 10-14, Miami — **USE, Inc. Fall Conference.** Contact: USE, Inc., Box 461, Bladensburg, Md. 20710.

Sept. 11-12, Ottawa — **The Government Computer Conference.** Contact: Janet Glover, Whitsed Publishing Ltd., Suite 2504, 2 Bloor St. W., Toronto, Ont., Canada. M4W 3E2.

Sept. 12, Namur, Belgium — **Cybersoft '79: International Symposium On Cybernetics and Software.** Contact: J. Lemaire, Palais des Expositions, Place Andre Rijckmans, B-5000 Namur, Belgium.

Sept. 12-13, St. Louis — **Gateway Computer and Office Systems Expo.** Contact: Judie Mcdaid, The Conference Company, 60 Austin St., Newton, Mass. 02160.

Sept. 12-14, Atlanta — **Project/Program Management Workshop.** Contact: Priscella Sterne, Workshop Regiatration Center, 101 Park Ave., New York, N.Y. 10017.

Sept. 12-14, Nashville, Tenn. — **National Association of Bank Servicers Eighth Annual Meeting.** Contact: James R. Bannister, National Association of Bank Servicers, Suite 302, 665 E. Dublin-Grandville Road, Columbus, Ohio 43229.

Sept. 16-18, Boston — **Nonbibliographic Data Bases,** sponsored by the New England Research Application Center. Contact: Asidic, P.O. Box 8105, Athens, Ga. 30603.

Sept. 17-18, Hartford, Conn. — **Cobol Programming Workshop.** Contact: The Foundation for Continuing Education, 15 School St., Boston, Mass. 02108.

Sept. 17-19, Munich — **Fourth International Conference on Software Engineering.** Contact: Prof. Fritz Bauer, Institut fur Informatik der Technischen Universitat, D-8 Munchen, 2 Arcisstrasse 21, Postfach 90 94 90, Germany.

Sept 17-20, Berlin, Germany — **Germany Informatics Berlin '79,** sponsored by the European Federation for Medical Informatics. Contact: On-Line Conferences Ltd., Cleveland Road, Uxbridge, Middlesex UB8 2DD, England.

Sept. 17-20, Chicago — **Fourth Annual Data Catalogue 2 Users Group.** Contact Beth Robinson or Ted Watson, Synergetics Corp., One DeAngelo Drive, Bedford, Mass. 01730.

Sept. 17-21, Munich — **Systems 79,** sponsored by the Munich Fair Authority. Contact: Jerry Kallman, 30 Journal Sq., Jersey City, N.J. 07306.

Sept. 18-19, Chicago — **Understanding and Using Electronic Mail.** Contact: Bob Sanzo, Frost & Sullivan, Inc., 106 Fulton St., New York, N.Y. 10038.

Sept. 18-20, San Francisco — **Wescon '78 Show and Convention.** Contact: Robert Myers, Electronic Conventions, Inc., 999 N. Sepulveda Blvd., El Segundo, Calif. 90245.

Sept. 18-21, Arlington, Va. — **Software Configuration Management.** Contact: Virginia Roe, Software Enterprises Corp., Software Management Training Institute, 2239 Townsgate Road, Westlake Village, Calif. 91361.

Sept. 19-20, El Paso, Texas — **Fourth Annual Data Processing Management Association Computer Show and Exposition.** Contact: Ray Karriker, P.O. Box 1894, El Paso, Texas 79950.

Sept. 19-21, Atlanta — **1979 Analyzer Users Conference.** Contact: Liz Toronto, Program Products, Inc., 95 Chestnut Ridge Road, Montvale, N.J. 07645.

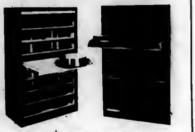
Sept. 19-28, Paris — **Sicob '79.** Contact: Commissariat General, 4-6 Place de Valois, 75001 Paris, France.

Sept. 20-26, Geneva, Switzerland — **Telecom '79,** sponsored by the International Telecommunications Union. Contact: R. Fontaine, Commissaire General, Telecom '79, Orgexpo, 18 Que Ernest-Ansermet, CH-1211, Geneva 4, Switzerland.

Sept. 23-26, New Orleans — **Common's Fall '79.** Contact: David G. Lister, Administrative Director, Common — F2, Suite 1717, 435 N. Michigan Ave., Chicago Ill. 60611.

Sept. 24-26, Atlanta — **Introduction to Distributed Data Processing for User Management.** Contact: Ellen Sokol, American Management Associations, 125 W. 50 St., New York, N.Y. 10020.

Sept. 24-26, Toronto — **1979 Annual Conference and Telecommunications Exposition,** sponsored by the Canadian Industrial Communications Assembly. Contact: Frank Masters, Trade Associates, Inc., Suite 1025, 5454 Wisconsin Ave., Washington, D.C. 20015.



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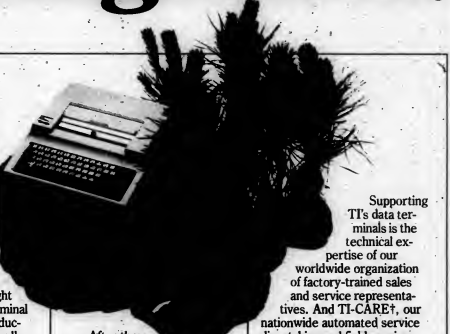

Weyerhaeuser logs data with TI's 743.

Weyerhaeuser, the world's largest wood products company, is cutting production costs down to size with TI's *Silent 700** Model 743 Electronic Data Terminal.

Weyerhaeuser brought TI's 743 on board as a terminal in their computerized production system that electronically scans the sweep and diameter of all logs, to determine their most productive value and end use as lumber.

The field proven 743 goes to work right in Weyerhaeuser's mill, where it logs detailed sawing operation information using its reliable 30 characters-per-second thermal printhead. It issues quantity, volume and shift productivity reports for mill production, and detailed figures for calibrating and maintaining the mill's equipment. And the 743's typewriter-like keyboard makes it easy to handle a pile of information without creating log jams.

After three years on the job with a virtually service-free record, the 743 has proven itself no run-of-the-mill data terminal. Weyerhaeuser isn't the only one logging information with TI's 743. Banking, real estate and insurance industries are trimming their paper work with TI's compact, efficient 743.

Producing quality, innovative products like the Model 743 Electronic Data Terminal is what TI is dedicated to. And TI's over 200,000 data terminals shipped worldwide are backed by the technology and reliability that comes from over 30 years of experience in the electronics industry.

Supporting TI's data terminals is the technical expertise of our worldwide organization of factory-trained sales and service representatives. And TI-CARE†, our nationwide automated service dispatching and field service management information system. That's why TI has been appointed the official computer and calculator company of the 1980 Olympic Winter Games.

If you would like more information on the Model 743 Electronic Data Terminal, contact the sales office nearest you, or write Texas Instruments Incorporated, P.O. Box 1444, M/S 7784, Houston, Texas 77001, or phone (713) 937-2016.

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Roving Terminal to Access Library for Hospitals

By Marguerite Zientara
CW Staff

LEWISTON, Maine — A "circuit-rider" terminal will soon be helping a number of hospitals here directly access the National Library of Medicine's (NLM) computerized information service.

Central Maine Medical Center's (CMMC) Hot-Line Librarian Project will make use of a traveling medical librarian who will visit area hospitals once a week with a portable terminal linking each institution to Medline, NLM's nine-year-old computerized medical reference system.

Medline provides physicians, nurses and other health professionals with references, via printout, to all the available literature worldwide on nearly every medical topic.

The program, based at CMMC, will be financed by a three-year grant expected to total nearly $190,000.

The Hot-Line Librarian Project is an outgrowth of existing medical librarian circuit-rider programs in rural areas, according to Raynna B. Genetti, director of the center's Gerrish-True Health Science Library and the project's creator. While Medline computer services at CMMC have been available to hospitals in the region since 1977, the Hot-Line Project will mark the first time a traveling Medline service has ever been implemented anywhere, Genetti noted.

Eleven hospitals in the area, some having as few as 50 beds, will be eligible for the project, Genetti said. Their participation will depend in part on whether they can provide the funds necessary to pay for the on-line computer time.

Participating hospitals will either pay for the on-line time themselves or charge the individual users for computer time, because the grant funds do not cover that aspect of the project, Genetti explained.

Each participating hospital will be visited at least once during the week, and the length of the visit will depend on how many inquiries the staff has, she continued.

Using a Texas Instruments, Inc. Model 745 printing terminal, CMMC presently hooks up to Medline to serve medical personnel as well as private citizens who travel to the center for information.

Because "we haven't had any trouble with the terminal and it suits our needs," Genetti said, the traveling librarian will probably be furnished the same model when he starts traveling next March.

The terminal prints out references, and sometimes abstracts, of more than one million articles and texts on "literally any biomedical and health-related topic of interest" to the medical profession, Genetti said. If the hospital visited does not have a copy of the article or text referred to by the traveling terminal, the circuit-rider librarian can go back to CMMC's collection — the largest in the area — and either mail or deliver the needed text.

The federal grant will also provide for a toll-free Wats line directly to the CMMC Health Science Library for use by participating hospitals on days when the traveling librarian is not scheduled to visit their facilities.

CMMC's present Medline program sees a "fair amount of use — about 50 searches per month," according to Genetti. "But I think there's potential for more use."

Each institution presently hooked up to Medline has its own financial arrangements for the service. CMMC's budget assumes all search costs for people affiliated with the medical center, but charges health professionals from other institutions and private citizens for searches.

Although fees for outsiders presently cover such costs to CMMC as personnel and materials, outsiders will pay only the on-line fee and personnel and materials fees will be absorbed by the grant.

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EDITORIAL

Corporate Responsibility

Bees' brains.
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The UK arm of Univac recently provided its international executive center in St. Paul de Vence, France, as the site for wide-ranging discussions of these issues.

The firm did not actually sponsor the seminar entitled "Science Fact vs. Science Fiction" but provided the facilities for the discussion to take place. Last year, the firm sponsored a similar seminar at the center which brought labor leaders and technologists together for a discussion of the future impact of microprocessor technology.

Both are interesting topics that have little to do with Univac's primary business. The sessions certainly were in no way trying to make sales or even prove Univac's expertise in any area. The entire program included only one speaker from Univac and he never mentioned the firm at all. In fact, more was heard about other companies during the three-day event than about Univac itself.

So why does the firm back the seminars?

"Corporate responsibility," according to John Pascoe, the Univac marketing director in the UK. The firm feels that it has a responsibility to provide a forum where issues that are not normally discussed in the computer community can be treated in an informal and relaxed atmosphere. When technical people, press and noncomputer scientists — this year science fiction writers and last year labor leaders — are brought together, all groups can gain a better understanding of the issues raised by technology.

It is a good idea and one that could be emulated by others in the field for their mutual benefit.

For example, it may seem far out, but a conference on the role of multinationals — and particularly the computer multinationals — in the Third World could bring together Third World politicians and computer company executives. It would certainly promote mutual understanding.

Many other good ideas for mainframer-sponsored meetings would be forthcoming if those companies would only decide to follow Univac's lead and let their imaginations run free.

Corporate responsibility in this field means more than just return on investment. Everyone in the computer community has a responsibility to discuss the important societal issues raised by the technology.

DATA PAST

Five Years Ago
August 7, 1974

WASHINGTON, D.C. — A government-instituted productivity study to measure increases in efficiency brought about through automation between 1967 and 1972 found an average productivity increase of 1.7% per year among the 14 agencies studied. All but three of the 14 reported gains resulted directly from computerization, Assistant Comptroller General of the U.S. Thomas D. Morris told an automation technology task force.

— — —

NEW YORK — An IBM marketing policy which limited the availability of 370 leased memory add-ons pushed third-party customers and others to seek alternate suppliers.

Eight Years Ago
August 11, 1971

CHICAGO — The elders of the DP community were feted here on the occasion of the computer's 25th birthday. Attendees at the Association for Computing Machinery's annual conference confirmed that acceptance and usage of computers was growing astronomically, faster than in the wildest dreams of the DP innovators of the recent and distant past.

— — —

MINNEAPOLIS, Minn. — Control Data Corp. introduced the 921 optical character reader, which used a helium-neon laser to drive a system that read 1,200 document/min and cost $1,865 on a one-year lease.

CABINET & WHITE HOUSE STAFF PAYROLL DP CENTER
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'Good job, Hoskins. The President will be very impressed!'

LETTERS

Flaws in Figures for NCR

While we appreciate the service *Computerworld* has done in attempting to place systems performance in perspective ["IBM 4300 Churns Up CPU Scene," CW, July 16], and while we are aware of the difficulties involved, we would like to correct several references to NCR Corp. systems.

- The NCR V-8455 and V-8555M systems bracket the performance range of the 4331, not the V-8555M and V-8565M, as stated in the article.
- The performance factor cited for the V-8455 should be 10 rather than 7.
- The V-8565M should be approximately 25 on the CW scale instead of 20. The multiprocessor version, the V-8565MP, should be increased to 43 instead of 34.
- NCR's two largest systems, the V-8650 and the V-8670, were not shown on the CW charts. Their performance values would be 154 and 248 respectively on the scale.

The performance charts also did not show the correct number of I/O channels on NCR systems. The correct values and number of I/O channels are:

Systems	Performance Value	I/O Channels
V-8455	10	4-16
V-8555M	17	4-24
V-8565M	25	4-24
V-8555MP	29	8-48
V-8575M	31	4-32
V-8565MP	43	8-48
V-8585M	52	4-32
V-8575MP	53	8-64
V-8585MP	88	8-64
V-8650	154	16-32
V-8670	248	16-32

F.W. Bauer
Director
Large General-Purpose Systems
Product Management
NCR Corp.

Dayton, Ohio

Request From 'Tortilla Land'

One of the principal needs of DP installations in Mexico is aptitude tests for programming so that training money will be well spent. IBM has a good one, and MAI, too — but no one else.

We have 14 other computer suppliers operating here besides IBM and MAI. But are there no independent tests?

Can you help us down here in Tortilla Land?

Donald R. Fulton
Guadalajara, Mexico

Unfair to Vocational Schools

In the philosophical tradition, perhaps Alan Taylor's title question in the July 23 column ["Do Vocational DP Schools Produce Programmers?"] may be answered by another question: Do law schools produce lawyers? We have had a negative opinion on this one from the highest court.

Having been involved in computer education of many types for more than a dozen years, I think Taylor is being unfair to the "vocational schools" by which I take him to mean the private, proprietary establishments. There have been some bad examples of these which have been well publicized. But some good ones are not so well known.

It has been my observation that not everyone has been happy with what goes on in the computer area in many tenure-ridden public institutions. I don't think you will find unit record operations offered in many private curricula, for instance.

As for putting a label on what is going on in computer education, I would like to suggest one along the lines of who does what: "computer processing." Not wishing to monopolize creativity or accept responsibility, however, I think finding a name might be fair game for a little contest.

Willard R. Post
San Jose, Calif.

READER COMMENTARY/Roger M. Firestone

Advice to NCC Critics: Take Part in Planning

The continuing debate over the technical program sessions and their poor attendance at this year's National Computer Conference, especially as represented by Peter Kushkowski's letter [CW, July 23], reflects a basic misunderstanding of how an NCC is put together. Having been an active participant in the 1974, 1976, 1977 and 1979 NCCs, I am compelled to discuss the subject once more in *Computerworld*, as I did in August 1977.

The paid staff of the American Federation of Information Processing Societies (Afips) is rather small and concerned mostly with such ongoing details as future conference locations, exhibit space allocation, publicity, conference accommodations and so on. Everything else is handled by volunteers, people who have full-time jobs. These volunteers include the Afips officers and directors, members of the NCC board (which determines long-term NCC policies) and the NCC committee (which oversees the NCC steering committees, two or three at a time). They also include the hundreds of people who put on each individual NCC.

To make an NCC work, the general chairman must assemble a steering committee of functional chairmen (and I mean both male and female chairmen); these chairmen must staff their committees in turn. Finding these dozens of people takes many months; not many people are able to spare the time to work on an NCC.

Once there is a functioning program committee, a call for participation it goes out. Again, this means a solicitation of volunteers. A technical program requires authors, panelists, reviewers and session chairmen. These people do the creative work in putting together the substance of the program. The program committee serves a management function.

In other words, if Kushkowski is eager to have a session on real-time process control applications included in a future NCC, the surest way for this to happen is for him to organize one himself. Since no program committee can have expertise on every topic in computer science, even a direct request such as Kushkowski's cannot necessarily be satisfied by committee activity.

Alternatively, Kushkowski could submit a paper on the topic; if it satisfies the referees, it will be fitted into the technical program somewhere. Survey and tutorial papers are as welcome as research papers; a Ph.D. is not necessary to participate in an NCC.

My answer, therefore, to those who have written letters in the past few weeks complaining that the NCC is not meeting their needs is: Volunteer! Get involved! Be an active participant!

There is still plenty of time to organize a session or write a paper for NCC '80. The operations committee is often short of people willing to work on the dirty jobs so essential to a smoothly run conference.

Many of the other issues raised by other letter writers deal with matters of personal preference, such as room temperature or session length. How long a session is depends on how interesting you find the material. For those who felt that New York City was too expensive, I sympathize; however, there are only a few cities in the U.S. that can accommodate a conference the size of the NCC.

It is indeed unfortunate that some

(Continued on Page 22)

HUMAN CONNECTION/Jack Stone

End User Training a 'Fine Art'

"We have no problem at all with the training program for our DP people. But we are having a devil of a time constructing a suitable program for our end users. How in the world do you do it?"

This quotation certainly can be attributed to any number of DP managers who are out there right now, trying to rush minis and micros to branch office locations. Actually, I first heard it more than a decade ago from a DP manager for a large Midwestern manufacturing firm.

My response to him is almost as applicable today as it was then. Because of the rapidly spreading interest in end user training resulting from the proliferation of minis, micros and terminals, it seems timely to present some of my thoughts on the subject, based on my personal experiences with user training.

- In my view, successful end user training is strictly a customized program, actually a fine art form which should only be handled by your best communications/instructional specialists. Although the ideas discussed below appear to be straightforward, it is very easy to apply them incorrectly. So don't assume you have discovered a solution — at least not until you build and evaluate your instructional design, very, very carefully.
- End user training, to be reasonably accepfable, must be tightly narrowed to topics that are truly meaningful to the operation and use of a computing machine. End users are terribly disinterested in the thrill-a-minute technology roller coaster all of us are riding, just as we are bored with hearing about the thermodynamic processes of the gasoline engine.

End users want to invest the minimum time necessary in learning to run and apply a computing machine, just as we want to spend as little time as possible learning to operate an automobile.

- Do yourself a favor and don't try to teach end users with anything less than a hands-on workshop, using CRTs. This strategy is far and away more cost-effective than any other, and I've tried them all — blackboard explanations, videotape packages, slide presentations, textbooks, you name it. These other techniques neatly convert the audience to pseudo-zombies in short order, in spite of the brilliance of the instructor.
- The workshop should be presented as a group of laboratory "experiments" similar to those you "performed" in your high school physics class.

Each experiment should be written up in the student workbook in the classic fashion. It should start with a brief narrative which includes purpose, its significance to the user, a dash of theory and some hints where appropriate.

Then, follow with a step-by-step procedure — guaranteed to be 100% debugged, without fail — to guide the user through the lesson. Hard copy of the solution to the lesson should be provided.

- Users should be organized into groups of two per instructional station. They should answer about 80% of their questions themselves, thus relieving the load on the instructor and making the learning experience — if you'll pardon the expression — fun.
- Naturally, each experiment or group of them should be preceded by and closed with some explanation by the instructor. Never let end users try to learn the material without an instructor being present, or at least a knowledgeable monitor.

Discovering Concepts

- Let users "discover" computer concepts by letting them perform experiments, observe results and *then* hear or read, for example, that "the television-like device that you have been using to observe information is called a 'display screen' " or "this small magnetic disk and its associated drive unit that you used to store yoor name and address is one of a large class of facilities termed 'secondary storage.' "
- Try as hard as possible to introduce the user's own applications into basic concepts training. It dramatically shortens training time, builds excitement and is a great introduction to follow-on applications training.
- User managers have been my best students, probably because they deal in concepts as a way of life. But it is crucial that you apply the 20-minute rule to them — they must have their hands on the keyboard within 20 minutes after the course begins.

Do not — repeat — do not give them a stirring three-hour lecture on the history of DP prior to the workshop sessions. And remember to drop the jargon, the codes, the internal flows and so forth from the material.

- Finally, the key to successful user training is: "Train in *what* the machine does, not *how* it does it!"

Letters to Stone should be addressed to him at Suite 222, 2233 Wisconsin Ave. N.W., Washington, D.C. 20007.

THE TAYLOR REPORT/Alan Taylor

New Approach Combats Deceptive Trade Practices

Jonathon Kwitney recently told *Wall Street Journal* readers about the problems that arose when he paid two bills with one check. The computer proceeded to record an overpayment on one account, which was of course wrong, but at least did no harm. But the program then proceeded to deny that the other account had been paid, which was both wrong and harmful.

In this case, it was a U.S. government computer, and I can see little that Kwitney can do to prevent such programming problems.

But this was not the only case in which Jonathon got scarred by computers. Another matter involved Allstate Insurance Co. As a result of a computer foul-op, the company charged for collision insurance Kwitney did not want, and had not ordered, from January to about May this year.

What appears to have happened here is something very common. Correspondence from Kwitney addressed to the company was not read by a customer service person, but simply passed into the computer. However, the correspondence was addressed to the company, not the company computer, and the address was given by the company.

Such treatment may well be a "trade practice." If so, there is hope on the horizon for Kwitney, because deceptive trade practices can be handled.

Boon for Consumer

Here in Massachusetts the course of deceptive trade practice matters took an interesting turn this January.

The standard law books of the Commonwealth were being completed by a couple of lawyers, Howard J. Alperin and Roland F. Chase, when they came to the section dealing with consumer law. Introducing the area last January, they wrote: "Using [these law book sections] is not as difficult as it may appear for nonlawyers. First, turn to the Table . . ."

Now, this is not an everyman's paperback guide. This is the 36-volume West Publishing Co. Massachusetts Practice series, books normally directed at lawyers. Having directions for nonlawyers who need the protection of the law

(Continued on Page 22)

Help Available to Fight Deceptive Practices

(Continued from Page 21)

in this area is new and good. This type of development can help the Jonathon Kwitneys of this world deal with deceptive computer practices as well as with any other type of deceptive practices.

In Massachusetts, the most effective way to attack apparently deceptive practices is to write the firm concerned a 30-day letter asking for an explanation, stating why you feel the practice is deceptive and telling how it hurt you. If the firm does not answer satisfactorily within 30 days, you can bring suit without having to wait for the Attorney General's office or some other government group to act.

If you can prove a "deceptive trade practice," attorney's fees and certain minimum awards are made to you.

Those 30-day letters are not likely to be totally ignored or treated just as other more informal complaints. And this is the way Kwitney can start handling his computer problems, or at least feel there is a way of handling them if he wants.

Another possible area for attack was brought up in *Time* magazine just when the Kwitney article appeared. This concerned the Blue Cross/Blue Shield (BC/BS) systems, where doctors and surgeons are apparently indulging in a "guessing game" with the Massachusetts and other BC/BS people as to what amounts will be paid for what procedures. Now perhaps that in itself is not deceptive, but subsequent BC/BS procedures are.

When a doctor guesses more than BC/BS will pay (because it is higher than the amount normally charged for the procedure in comparable circumstances), BC/BS not only rejects it as far as paying from the subscriber's policy, but it also endorses it as an amount the physician has a right to receive directly from the subscriber!

The computer output form goes as far as to state that the doctor should be paid the entire balance of all that he has claimed from BC/BS. It is, in fact, a third-party invoice.

With this guessing game, these third-party invoices are being inflated so that the doctor can be sure he is getting everything possible from the insurance policy. Then, as a result, he inflates his charge to the patient.

Now that is certainly a deceptive trade practice, although whether it is only deceptive on the part of the doctor who puts up the first "guess" or on the part of the BC/BS who proceeds to endorse the guess with its third-party invoice system I really don't know.

Interest Computations

Other candidates for attack as deceptive practices are the types of interest computations made by programs run by various department stores. The particular deceptive practice that seems to be clearly harmful regarding the interest computations is the labeling of certain output as being the "billing date" when it isn't the date the bill was sent to the user. Far too often, this date is simply the cycle date, the time that some or all of the input being received was no longer posted into the monthly account.

Calling a cycle date a billing date is wrong and certainly deceptive.

In each of these matters, the key question will be to determine what a practice is. As I see it, the use of a program is a practice at least, and its repeated use in certain billing and other cycles may well be. If this is so, the deceptive practices legislation may hold out hope to people who have been hurt by the computer problems that are attracting such publicity.

Cleaning these areas up may at last be possible through individual action.

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Critics Urged To Participate

(Continued from Page 21)

people did not receive copies of the program booklet; they were available for the asking at the New York Hilton, where most of the sessions were held. The lead time for papers is not eight months but closer to six, which compares very favorably with that of most journals. This time could be shortened only by eliminating refereeing or printing from typescript, which would certainly reduce the quality of the proceedings.

A cross-index of papers would be valuable, I agree, and should be included in future proceedings (space was tight this year, to be sure).

When almost 80,000 people attend a conference, it is inevitable that some are not satisfied, despite the good intentions and heroic efforts of hundreds of volunteers. There is nothing wrong with this dissatisfaction if it becomes a desire to work to make future conferences even better.

Firestone was on the steering committee of NCC '79.

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READER COMMENTARY/ Walter E. Ulrich

Electronic Mail Has Come a Long Way

I was very disappointed in "Improper Use Seen Hindering Electronic Mail" [CW, July 2]. Its unduly pessimistic viewpoint cannot be supported in fact.

Let me be more specific. According to the article, a researcher at Battelle laboratories said, "In the case of electronic mail, probably nothing very important will be in use in the next five years." However, there have been some very major advances in the past five years and there are some excellent systems in use today. With firms like AT&T, IBM, Xerox, Exxon, Bell Canada/NTI, the value-added network carriers, the minicomputer and distributed processing vendors and lots more atttacking this market, some important advances and new systems in commercial use will be forthcoming in every one of the next five years.

"'In the case of electronic mail,' Bengston said, 'most of the stuff is prototype or exprimental anyway.'" Sure, there is lots of exotic "stuff" that is experimental in electronic mail systems (EMS) and just about every other computer and communications area. But a lot of solid systems are providing significant economies and increased responsiveness.

"The controversy over analog vs. digital transmission will also be an issue in electronic mail." This is largely a question for the underlying (transmission) carriers. Interface devices (including modems and data service units) will be with us for some time to come.

Furthermore, I do not believe there is much controversy in saying it is cheaper to transmit text as characters (bytes) than as a large number of light or dark pixels (bits) as in facsimile.

Many Bugs Already Out

"Getting the technical bugs out of an electronic mail system will be a step in the right direction . . ." Will be? The technical bugs have been solved already in a great many such systems.

"In order for an electronic mail system to work in an optimal way, each manager has to use it directly." Even for the class of electronic office products that might be "optimized" by direct management use, real benefits can still be achieved. Any system must be designed to fit an organization and its managers and staff. Many EMS were not designed for and have never been used by managers; yet they meet important message communications needs for their companies.

Many companies have been using electronic mail: a grain and cotton merchandiser, a floral wire service, an oil company, a semiconductor manufacturer and lots more. One example that comes to mind is Hewlett-Packard Co., which implemented such a system internally in 1971 and 1972 — more than seven years ago. Since that time, message traffic has increased 30 times and more than 150 million characters of remote job entry traffic a day have been added; transmission costs have only doubled. A 500-character domestic message is sent for less than 7 cents and an international message costs 15 cents to 20 cents including hardware and transmission costs.

There are a number of vendors of EMS services including time-sharing companies and value-added network carriers. For example, Tymnet, Inc. has been offering its OnTyme EMS as a public service since the summer of 1977. The average cost for a brief message is in the 30 cent to 40 cent range. A full page of text (4,000 characters) can be sent to two recipients for about $1.25 a copy between the 100 or so cities that have local Tymnet network nodes.

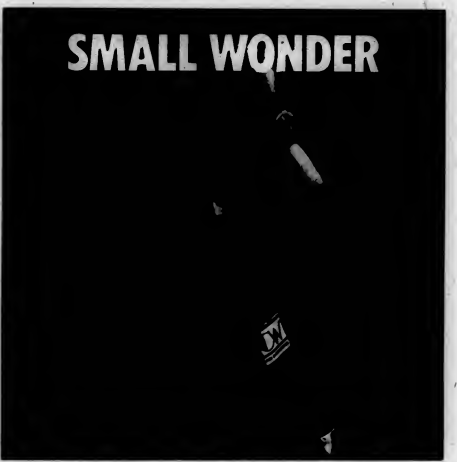
Products are also available. Both Hewlett-Packard and Tymnet offer versions of their systems for sale as in-house message switches. Computer Corp. of America (CCA) has been offering an electronic main product (and subscription service) for more than a year.

Rolm Corp. has just announced its Rems EMS. The Rolm offering is praticularly interesting because it ties into the redundant processor of its computerized business telephone BX) systems.

Many organizations of all sizes are using EMS, and a growing number of companies are offering a greater diversity of services and products. Consulting firms can help a company overcome real and imaginary "stumbling blocks." Any company with more than $100 million in sales should be looking at EMS now.

Ulrich is a Houston-based consultant to technology companies and DP departments.

'The Instant a Brownout Hits . . .'



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CW CUTLER-WILLIAMS, INC.
2655 Villa Creek Drive, Suite 205
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the hexadecimal kid and his faithful dog ascii

A FANTASY IN SIXTEEN BITS

by Richard Forsyth

BIT 14

BIT, BITTER, BITTERNESS

Hex and Execute, having failed to capture Dr. Null in Silicon Valley, are severely reprimanded by Inspector MacRo and demoted. After an unpleasant night ride on a cramped data bus, they return to Base 16 where Simula and Fetch are waiting for them.

After a tiring slog up the hillside, they reached the AI lab. Simula and Fetch were already at the door to greet them.

"Welcome home!" Simula said enthusiastically.

Neither Hex nor Execute could summon the energy to reply. Hex looked from face to face, trying to discover an inkling of what he wanted to know behind their bland smiles. Simula's cool blue eyes gave no clue to her inner thoughts.

"Glad to see you're better," Execute said to Fetch.

"Glad you're safely home," Fetch replied. "We heard some pretty hair-raising tales of your adventures in Silicon Valley."

"Come in," Simula beckoned.

As they followed her in, Fetch started to explain, in the friendliest possible tones, that — strictly on orders from the System — one or two very minor changes had been made while they were away. It had been felt, for instance, more appropriate (by whom was left deliberately vague) that he, Fetch, should now occupy a room on the upper floor, next to Simula's, leaving his old room at ground level for Hex.

"You'll find all your belongings in place," Fetch said as he opened the door to show him. Hex could see all his own books, papers and listings stacked neatly on the shelves, with one notable expection — the System Manager's Handbook.

Hex closed the door behind him. For a long while he sat on the bed, gazing morosely into space. Then his reflections were disturbed by a soft knock. Simula entered.

"It's time for dinner, Hex," she said. "We thought we'd throw a little party to celebrate your return. Fetch has been down to the cellar and uncorked a bottle of Coral '66. It was a particularly good year. I know you'll like it."

"Thanks," Hex said absently, his mind still seething with unasked questions. They made their way to the dining room. Fetch and Execute were already seated and Execute was tucking in greedily to an appetizing 2½D core plane.

Fetch poured a glass of Coral '66. "Here, Hex, taste this."

Hex raised his glass and they all did likewise. "Top down," he said and drained it in one gulp.

"Bottom up," chorused the others.

The festivities were an absolute washout, about as merry as a mausoleum. Hex hardly spoke and even Execute was unusually subdued. It was left to Fetch and Simula to make all the running. The gathering broke up quite early and they all turned in for the night.

Alone in his room, Hex made a desultory attempt at reading, but it was useless. Indignation was rising in him, replacing the numb acceptance of his new status. When it was dark, he slid noiselessly out of the window and paced around outside.

His steps took him to the wall below Simula's bedroom. Her light was still on, but the light in his — or rather Fetch's — room was already off. He stood mesmerized, unable to sort out his own feelings. "What am I doing here?" he asked himself. "Spying?"

At last, the light went out. The effect on Hex was dramatic. He shook himself out of his trance-like immobility, dashed indoors and bounded upstairs. At her door, he raised his hand to knock, but then steadied himself.

"What are you doing?" he asked himself again. "There's no point in making an embarrassing scene." For a moment it seemed as if reason might prevail, but then his resolve snapped and he flung open the door, switching on the light as he did so.

The room was empty. Simula was spending the night elsewhere. From next door, he thought he could hear the low murmur of information transmission.

He put out the light, closed the door quietly and returned, desolate, to his room.

Just before dawn, he was abruptly wakened from a bout of fitful sleep. He sat up alert, banishing the fevered images of jealously from his brain. His ears rang with a penetrating, high-pitched whine.

It was Ascii's distress call on the UHF wave-length, coming from the direction of Silicon Valley.

It didn't take long to work out that Inspector MacRo had sent in his shock troops, the Night Operators. Ascii was in real peril: They wouldn't bother to catch or tame him; they would destroy him on sight.

In the pale predawn twilight, Hex set out briskly along the path he now knew, determined to put as much distance as possible between him and what had been his home before anyone reported him missing.

"This time," he thought, "I won't be coming back."

Has Hex gone out of his mind?

What would you have done?

More breathtaking suspense in our next bit.

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Forsyth is software manager for RAIR Timesharing in the UK.

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Division of Work Assailed

Book Raps DP Practices, Management

By Don Leavitt
CW Staff

Despite the classic management theory that division of labor leads to increased productivity, the way work is divided and managed in most DP shops today is having almost exactly the opposite effect.

Much of today's order is based on a desire by management for social control, but work does not have to be organized to control human behavior. Examining workplace activities begins to point us in the direction of understanding other forms of work organization.

Those are the contentions of Joan M. Greenbaum, a lecturer in the DP department at LaGuardia Community College in New York and author of *In the Name of Efficiency*, published by Temple University in Philadelphia.

After devoting the first third of her 160-page book to a history of data processing and a history of management theory, Greenbaum looked more closely at what she calls "shopfloor practice." It is in this part of the book that the author attacked everything from the separation of operations, programming and analysis to the growing use of terminals for on-line programming work.

Crippling the Individual

According to Greenbaum, much of the basic organization of a DP shop — that division of operations, programming and systems work — has failed in what she sees as its fundamental purpose: the imposition of control over the workers. She clearly sees the "jack-of-all-trades" programmer/operator of the early 1960s — when she apparently entered the field — as the ideal role in terms of personal satisfaction and, ultimately, the good of the organization.

Greenbaum accepts the proposition put forth by sociologist Phillip Kraft two years ago that the fundamental push toward "structured" activities in systems development was intended to "deskill" the programming function, allowing management to get more and more work out of less and less skillful people.

But even that push failed to provide the control expected, she said, primarily because it continued the division of work that had already begun to demoralize the staff. As each worker saw a smaller and smaller portion of the whole project, he felt more isolated and less important.

At several points in her treatise, Greenbaum argues that what is done in the name of efficiency for capitalism can be crippling for the functioning of the individual. She quotes Karl Marx, who complained that work which subdivides thoughts and actions "attacks the individual at the very roots of his life."

Two Management Theories

Early in her book, she notes the existence of the two classic management theories: Theory X places formal authority and coercion (Greenbaum's words) in the primary position; theory Y emphasizes worker collaboration, motivation and human relations.

But neither seems to satisfy Greenbaum. "I suggest that 'good' management policy, whether it follows the outlines of theory X or theory Y, is but another patch in the worn-out quilt of divided jobs, controlled workers and bureaucratic structure."

She lashes out strongly against the growth of on-line development work run from CRT terminals in the programmers' area.

Even though a 1976 study indicated a substantial increase in productivity through this approach, the gain is largely illusory, Greenbaum contends. It comes from elimination of what management sees as useless walking by the programmer.

On the contrary, she said, programmers and "even first-line managers" tend to agree that

(Continued on Page 26)

Mini Users Gain Fortran Help

FT. LAUDERDALE, Fla. — Systems Engineering Laboratories, Inc. (SEL) has introduced a "family" of separately priced Fortran compilers, runtime libraries and optimization tools for use on its minicomputers.

Running under either RTM or MPX-32, the family includes a pair of compilers: Fortran 77+ meets or exceeds the ANS Fortran 77 standards; Fortran 66+ is a superset of the ANS Fortran specifications written in 1966, a spokesman said.

A pair of runtime library packages offering trade-offs between price and performance can be matched with either compiler, presenting the user with a choice of four possible combinations.

SEL is also offering a statistical subroutine library that includes 111 routines which can be use for standard deviation calculations, averaging and "other common needs," the spokesman said.

Completing the "family" are two Softool Instrumentor utilities from Softool, Inc. intended to help users optimize and debug their programs. The Instrumentors differ in the amount of detail they provide and, therefore, offer the user still another choice.

Backs Structured Programming

Fortran 77+ is said to meet Military Standard 1753 and Instrument Society of America (ISA) standards in addition to those set up by the American National Standards Institute. More important to commercial users, it also supports structured programming with features such as DO . . . UNTIL and BEGIN . . . END constructs.

Other extensions improve program efficiency while reducing development costs, the spokesman claimed. Fortran 77+ costs $4,000 in binary form while Fortran 66+ costs $200.

The Scientific Runtime Library (RTL) is a collection of subroutines providing operating system services, mathematical library routines and language extensions for Fortran 66+ and Fortran 77+. It is also available as a stand-alone product for execution-only systems that do not need a compiler. The Scientific RTL costs $1,700.

The Scientific Accelerator is a higher performance RTL. It provides all the Scientific RTL features plus fully integrated hardware, software and firmware which "significantly improves" Fortran program execution speeds, the spokesman claimed.

The Scientific Accelerator is available in several versions. Software only, for those sites with the required firmware, costs $2,700. The complete package with a programmable read-only memory implementation costs $4,500 while a writable control store implementation, allowing custom work, costs $8,000.

The Instrumentor packages report execution times and usage frequencies of Fortran programs, showing references to source code for easier analysis. The packages cost $2,500 each.

SEL is at 6901 W. Sunrise Blvd., Ft. Lauderdale, Fla. 33313.

End of an Era

FT. LAUDERDALE, Fla. — The introduction of a family of separately priced Fortran compilers and related products for Systems Engineering Laboratories, Inc. minicomputers marks the end of an era, according to a spokesman.

Until now, the company has been — unintentionally — the last major minicomputer manufacturer to keep its software costs bundled into its hardware fees, he explained.

Now that's all over and users everywhere have the opportunity and the responsibility to choose their software carefully because it does carry its own price tag, he added.

Package Aids DOS/VSE Tape Usage

NEWPORT BEACH, Calif. — Tape libraries are expected to continue to be important in DOS/VSE installations. That is why Tower Systems, Inc. rewrote the DOS/VS-oriented Tfast/VS tape management system and named the result Tfast/VSE, according to a spokesman.

The rewrite has features no other system has, he claimed. For example, Tfast/VSE resides in the Shared Virtual Area (SVA), and that avoids mulitple transient fetches from the core-image library, he said.

All operator communications are handled in the problem program so the Logical Transient Area (LTA) and SYSLOG are not tied up, he continued, noting that "Intervention Required" messages are among those handled this way.

To avoid LTA congestion if the correct tape volume is not mounted, Tfast/VSE puts the affected partition to "sleep" after notifying the operator, then "wakes it up" and rescans the drives at user-defined intervals until it finds the desired volume.

Security Provisions

But efficient use of system internals isn't the only highlight of the new tape library package, according to the spokesman. Data written to tape can be encrypted to protect sensitive files, with the encoding/decoding controlled by a user-defined scrambling key.

The package also supports a dual password system for general security. One passwork is required to gain access to the system, the other to gain access to specific files, the spokesman explained.

All files are version-protected, date-protected or both, and operators are not allowed to scratch active tape data sets. In addition, duplicate serial numbers are never allowed to enter the system.

Other features are said to include automatic volume recognition (AVR), early device release, multiple CPU support without issuing sense-reserve/sense-release, Vsam catalog support and enhanced multifile, multireel support.

Job accounting information is integrated into an audit reporting facility. All maintenance and display functions are available on-line through an integrated interface with CICS, Tower added.

Intended for both DOS/VS and DOS/VSE sites, the package costs $7,500 or $300/mo under a lease plan, the spokesman said from Suite 115, 3901 MacArthur Blvd., Newport Beach, Calif. 92660.

Logic Design Eased

OTTAWA — F/Logic is described by Bell-Northern Research Ltd. as an interactive simulation package that simplifies the design and analysis of digital circuits.

Designed to run on IBM 370 or 30 series CPUs using VM/CMS, the Fortran IV program makes it easy to evaluate design alternatives, to explore component and timing tolerances and to simulate potential circuit faults, a spokesman claimed.

F/Logic's ability to handle large simulations is one of its more interesting features, he added, noting that the system typically works with up to 4,000 gates but can handle 32,000, each with normal and complemented outputs.

The package can simulate more than 1,000 faults in parallel, either manually or automatically. F/Logic can test the faults and then pinpoint which were detected by the test pattern, the spokesman continued.

Graphics output showing waveforms can be produced on a terminal and line printer as well as on a plotter, he claimed.

Said to be compatible with IBM 4300 series CPUs as well as the earlier machines, F/Logic is available with both source and object code and documentation for $75,000. Training and start-up technical assistance are extra-cost options.

Bell-Northern's Software Products Licensing Group can be reached through P.O. Box 3511, Station C, Ottawa, Ont., Canada K1Y 4H7.

Advisors Offered 'Partax' To Study Tax Law Changes

NEWPORT NEWS, Va. — Business consultants or tax advisers can reportedly use the Parametric Tax (Partax) evaluation program now available from Soft-One to analyze their clients' positions as tax laws change.

Developed on Digital Equipment Corp. PDP-11/03 but also available on PDP-11/40 under RT-11, Partax enables the user to define the client's basic information and then work with as many as 43 different parameters to determine the impact of alternative strategies.

The PDP-11/03 must have 56K bytes of memory, the EIS extended arithmetic chip option, a VT52 CRT/keyboard terminal, dual 8-in. floppy disks and 180 char./sec printer. If a PDP-11/40 is used, it must have extended arithmetic and the floating-point instruction set options as well as RT-11 software, the spokesman said.

Written in Fortran IV, Partax is distributed on a floppy disk in object code, along with necessary data files and a set of five test input files, for $400.

Soft-One is at 315 Dominion Drive, Newport News, Va. 23602.

DP Practices Rapped by Book

(Continued from Page 25)

walking often is productive because it allows the worker to think about a problem and take a break from coding.

But Greenbaum sees another problem arising from the use of programming terminals. As they become more prevalent in the programmer's work area, the noise level from these devices grows steadily worse.

Greenbaum also writes briefly of the risks of computer crime and sabotage, but then comments, "it is more common for DP workers to give vent to their frustations by slowing down, 'working to rule' and attempting to control at least small decisions that effect an impact on the pace of work."

She has seen a "remarkable number" of situations in which management controls conflict with worker productivity.

Summarizing the book, Greenbaum says, "We are told human nature is competitive and individualistic, but DP shopfloor actions contradict this.

"By sharing knowledge, DP workers have created, in effect, their own shopfloor culture that give workers at least the ability to tolerate the contradictions they face every day on the job."

Greenbaum's book costs $15.

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'QDMS' Extended

Five RSTS/E Files Linked

HARTFORD, Conn. — Version 3A of the QDMS data management system now available from Quodata Corp. supports multifile linking, which allows users of Digital Equipment Corp. PDP-11s running under RSTS/E to link as many as five files.

Other enhancements include extended reporting capabilities, file dump, screen text editor, new access and security provisions and "greatly simplified" operator interfacing, a spokesman said.

QDMS is an interactive, end-user-oriented system controlled by an English-language command vocabulary which can be entered from a terminal or in batch mode, he noted.

The multifile support provides users with access to data wherever it may be. This allows more comprehensive DP but avoids extending normal files with data that is used only occasionally, the spokesman continued.

The report writer has been modified to run 35% faster, he said. In addition, it has a form letter capability with unlimited text, support for greater report size and complexity, enhanced text substitution to support histograms and a facility that produces reports from linked files on an ad hoc basis.

QDMS also has a sort — which Quodata claimed is the fastest available to RSTS/E users — and a building-block programming facility, which the vendor said helps cut programming time by as much as 95%.

The $5,000 QDMS can be ordered from Quodata at 196 Trumbull St., Hartford, Conn. 06103.

'Autotab II' Strengthened

PHOENIX — Release 5.0 of Autotab II, Capex Corp.'s financial modeling, planning and reporting system for IBM 370 or 30 series CPUs, contains enhanced reporting capabilities, new analysis functions, and features to ease writing complex models, a spokesman said.

Autotab II supports applications ranging from simple budgets to complex corporate financial models, but a DP background is not needed to use the system, he noted.

Special functions are available for discounting, compounding and determining return on investment. In addition, sorting of report information, consolidation of subtotal budget figures and support for "what if" analyses are included, he said.

The packaged capabilities extend to histogram graphing and the linking of Autotab II models with user-written subroutines in Cobol or Fortran. A library of financial subroutines is provided, Capex noted.

The new release was specifically designed to reduce the time and effort needed to implement large planning applications. It makes it easier for a single model to be used by many companies, divisions, departments, product lines or cost centers, the spokesman asserted.

Autotab II operates on the IBM or compatible CPUs under various operating systems. Release 5.0 costs $21,000; the vendor can be reached through P.O. Box 13529, Phoenix, Arix. 85002.

B&B Offers Bargains, Cuts Some Prices 48%

SUNNYVALE, Conn. — Users running IBM mainframes under OS or OS/VS temporarily have some bargain basement prices to consider from Boole & Babbage, Inc. (B&B). The software firm has cut some prices as much as 48% and combined some products into packages that cost up to 40% less than the separate products previously cost.

The Control/CICS package has been reduced 44% under the repricing and is now available for $7,000.

Price Nearly Halved

The previously combined Computer Accounting System/Computer Performance Analysis/Facility Management Reporting (CAS/CPA/FMR) package now costs $8,000, representing a 48% drop from its normal price.

B&B has combined CAS/CPA/FMR with Control/CICS for $13,500, or 40% less than the previous cost of the products when purchased separately. Putting CAS/CPA/FMR together with Control/IMS, the vendor is now charging $22,500 for the combination, or 16.6% less than the previous separate charges.

B&B is at 510 Oakmead Parkway, Sunnyvale, Calif. 94086.

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The HP 2621: sim

Simple doesn't have to mean unsophisticated. The proof is in our new CRT terminal, the HP 2621.

Before building it, we took a long, hard look at the way you use a simple terminal. Then we took the knowledge gained in more than 10 years designing computer products and applied it to engineering an interactive character-mode CRT terminal from the user's point of view.

The outcome was actually two models. The HP 2621A, which sells for $1450. And the HP 2621P, which has a built-in printer, costs $2550. You obviously want the sharpest display made. So we used the 9x15 character cell you see on every HP CRT terminal, including the top-of-the-line. And, to help you look back at the data you've entered, we provided two full pages of continuously scrolling memory.

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So why don't you check out the HP 2621 by calling the nearest HP sales office listed in the White Pages. Or send us the coupon. Then see for yourself how sophisticated a simple CRT terminal can be.

Try this on your favorite CRT! With the 2621P, you just hit a key and in seconds you have hard copy of your CRT display. The built-in thermal printer prints upper and lower case at up to 120 cps.

The 2621's bright, high-resolution CRT, with enhanced 9x15 character cell, displays the full 128-character ASCII character set, including upper and lower case, control codes, and character-by-character underline, in 24 80-character lines.

Eight screen-labeled preprogrammed function keys magnify the power of the 2621's keyboard. Preprogrammed functions include editing, terminal configuration, printer control and self-test.

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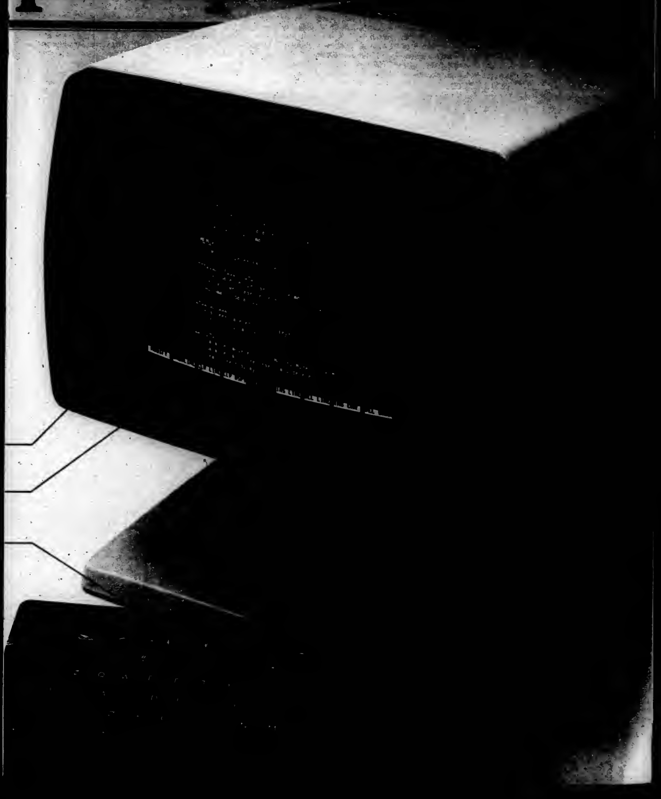

Packages Handle NCR Growth Path

MINNEAPOLIS — A set of interactive financial accounting packages designed to allow users to migrate, over time, from an NCR Corp. I-8130 to an I-8150 or to an 8200 is now being offered by Open Systems. Inc.

The migration path has not been an easy one, a spokeswoman noted. The I-8130 is a diskette-based system, built in Germany and supporting visual records or ledger cards. The I-8150 is configured around fixed disks for off-line storage and, like the 8130, is a single-station operation. The U.S.-built 8200 can support multiple stations and peripherals that differ from the two smaller systems.

But the modules in the Open Systems offering — billing/-accounts receivable, accounts payable, general ledger, inventory and payroll/job costing — perform identically on each of the target configurations, the spokeswoman claimed.

The programs support the generally accepted elements of each application area, with the selection of specific approaches under user control. Capabilities that are clearly industry-dependent probably would have to be built into front- or back-end modules, the spokeswoman noted.

The base system supports a financial statement report generator. It also provides either last in/first out or first in/first out and average cost inventory evaluation.

Written and distributed in ANS Cobol 74, the I-8130 and I-8150 implementations can be licensed from Open Systems for $800 per application. The 8200 versions costs $1,000 per application, the spokeswoman added from 430 Oak Grove, Minneapolis, Minn. 55403.

Net Minds Finances

FAIRFIELD, N.J. — Designed for corporations with multiple cost centers, divisions, business units, product lines or subsidiaries, the Consolidation Services now available on the Rapidata, Inc. network will aid executives in monitoring, reporting and analyzing company performance, according to a Rapidata spokesman.

The customized Consolidation Services provide integrated capabilities for both management control and corporate planning and budgeting. The system supports multidirectional reporting, foreign currency conversions, adjustments and eliminations and "any change in organizational and account structures," he added.

Graphics Available

User-oriented graphics and analysis capabilities are available for projections, budgeting, planning and evaluation of alternate business strategies by corporate executive.

The system was designed to meet internal and external — primarily government — reporting requirements, yet be flexible enough to change, as needs change the spokesman continued.

Since the system is customized to meet a comapny's current and future needs, its scope is broad and executives from diverse departments within organization can utilize its capabilities, he noted.

The custom work may take two weeks to two months and cost $5,000 to $20,000. Once the system is operational, the user faces normal charges for system resources; the spokesman estimated that this would probably range from $1,000/mo to $2,000/mo.

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Manitoba's first female telephone operator, Ida Cates was called "the voice with a smile." She willingly provided such information services as weather reports, hockey scores, medical advice and recipes.

Manitoba Town to Test Viewdata-Type Service

By Brad Schultz
CW Staff

WINNIPEG, Man. — Canada's Manitoba Telephone System has announced a program of telecommunications services that includes home access to computerized data banks via TV — a concept known in the U. S. as Viewdata.

Known here as Videotex, the public data base retrieval services will be offered as part of Manitoba Telephone's Project Ida, an ambitious program to "test the technology for tomorrow's 'age of information' " named for Ida Cates, who became the province's first woman telephone operator in 1882.

With Videotex, "everything from stock market quotations to local history to video games can be 'called up' on the [TV] screen at the push of a button," according to a spokesman. Early next year, the utility will offer Videotex and other Project Ida services to about 50 homes in the South Headingley, Man., area on a trial basis.

These initial users of Videotex will have access to several thousand pages of information, the spokesman said, explaining that one page fills a Canadian standard TV screen. The number of accessible pages will be increased "rapidly" if Manitoba Telephone's expectations of high demand are fulfilled in this rural hamlet.

But will Ida play in South Headingley? Besides Videotex and closed-circuit TV access to commercial-free cinema and "cultural events," townspeople will gain an automatic fire reporting system triggered by fire, smoke and heat detectors. At present, residents must rely on fire departments located in communities about six miles away; the minicomputer-driven system is expected to save precious minutes in emergency response times.

Moreover, Ida means South Headingley will be introduced to the benefits of coaxial cabling. As the medium for all Ida services, this "electronic highway" averts the need to install a private telephone line for each user

(Continued on Page 34)

Requires Architecture Compatibility

LDD: Future Communications Solution?

Edouard Y. Rocher
Special to CW

The advent of large-scale integration (LSI) technology is making distributed systems the efficient approach to optimal implementation of most new applications involving interactions between men, machines and computer systems.

Interactive systems have three major components, as shown in the figure on Page 32 — processors, the network and terminals. By affecting the character of each component, LSI is profoundly influencing the direction of distributed processing, distributed data base management, nationwide data distribution networks, minicomputer support for large packet-switched networks and the use of intelligent terminals.

The concept of a distributed system is generally associated with networking, which covers two complementary notions: system networks that define logical links between devices and distribution networks, which include data transportation facilities.

No such offerings exist at the present time for local data distribution (LDD) — another domain where LSI has a major role to play. With current technology, a local high-speed (1M byte/sec) packet-switched LDD system can be implemented and a "universal interface" can be defined. To get there, however, it will be necessary to avoid the simultaneous development of a multitude of incompatible architectures.

A system network is defined by its architecture, which is a set of rules governing the exchange of information between two or more end users. Following IBM's announcement of Systems Network Architecture (SNA) in 1974, the DP industry produced a variety of architectures for distributed systems.

Most vendors have defined their own architectures. These include Burroughs Corp.'s Burroughs Network Architecture, the Comten Network Architecture from what is now NCR Corp.'s Comten Division, Digital Equipment Corp.'s Digital Network Architecture, NCR's Distributed Network Architecture, Univac's Distributed Communications Architecture and Honeywell, Inc.'s Distributed System Environment.

These architectures have a layered structure; each layer of control specifies the protocols and formats applied to communications between peer layers. Generally, up to seven layers are defined, including three main layers: logical resources access control, transmission control and physical distribution control.

The architecture usually does not specify the interface between layers. Each control layer processes its format (also known as header) according to its content and the information passed by the interface with the preceeding layer. Once processed, the rest of the message is passed transparently — hence, without modification — to the next layer.

The transparency between an architecture's different layers is a key feature that allows communications among all the various products whose design is architecture-determined. The architecture establishes a logical link between devices from a given vendor. In the figure, arrows indicate the logical link created between processors and terminals.

> *"By the year 2000, more than 100 million digital terminals will be installed in the U.S. It is questionable whether today's practice of adapting [local data distribution] to universally available telephone facilities is a viable way to meet future needs of such extent."*

When a message is assembled and progresses toward the functional center of the distribution network, transparency of the communications process increase. And, with

(Continued on Page 32)

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Local Data Distribution: Solution for Future?

(Continued from Page 31)

the data link controls derived from IBM's Synchronous Data Link Control (SDLC) and adopted by most other architectures such as High-Level Data Link Control (HDLC), the transparency required from the data transport facilities is pushed down to the bit level. This reduces the role of the common carriers to simply providing a bit-transparent transport facility.

Arpanet Pioneering

The data communications approach to the system network is represented by the other set of arrows in the figure. This approach was pioneered in the early 1970s by Arpanet, an experimental nationwide network established with funding from the U.S. Department of Defense.

Arpanet's primary objective has been to share the processing resources of DP centers equipped with a wide range of devices from different vendors. The network's planners have tried to provide compatibility between all associated equipment and to reduce long-lines transmission costs by multiplexing based on methods of packet switching

Commercial or public packet-switched networks have subsequently been derived from the first experimental packet-switched nets, including Telenet and Transpac. Like Arpanet, these nets extend from coast to coast with nodes reaching through the conventional facilities of local distribution networks.

Future users will decide whether the data processing and data communications approaches to system networking are complementary or conflicting. This controversy may be resolved after the public packet-switched networks clarify how they intend to deal with the new distributed sytem architectures.

LDD Optimization

By the year 2000, more than 100 million digital terminals will be installed in the U.S. It is questionable whether today's practice of adapting LDD to universally available telephone facilities is a viable way to meet future needs of such extent.

Since terminals will inevitably be connected to LDD systems, now is the time for LDD optimization. And, because the problem is more attributable to hardware than software, compatibility among architectures of distribution systems is an even graver consideration than compatibility among architectures of system networks.

What can the user expect from LDD optimization? With current technology, an innovative approach to LDD should render high performance and lower costs.

On a dedicated line in the LDD environment, data transmission at 1M bit/sec controllable by current LSI random logic — is less expensive than it is at 1K bit/sec.

Moreover, despite the fact that telephone and community antenna television (CATV) networks provide quite different services, it is significant that CATV service is offered at one-quarter to one-half the cost of telephone service. One reason is that the investment on a per-subscriber basis is about five times larger for the telephone network than for CATV.

The local plant of the former has a star structure with a dedicated pair to each user and a large switching center to control the network.

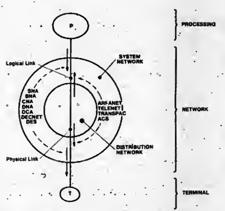
A CATV network, on the other hand, has a tree structure with a hierarchy of distribution cables and amplifiers shared among a large number of users. In this arrangement, the head-end is connected to the rest of the network by a single coaxial cable for up to 10,000 subscribers. And head-end equipment is very simple in design.

The approach to LDD should also provide a universal interface defined with high-performance, packet-switched LDD. This would entail migration of the functions needed to optimize the data transportation facilities from the system network toward the distributed network.

In conclusion, LDD is:

- A timely problem because the technologies are at hand to define new network access standards.

Fig. 1: THREE COMPONENTS of an INTERACTIVE SYSTEM



Three Components of an Interactive System

- An urgent problem because it requires establishment of communications standards before penetration of the potential network becomes too great.
- A fundamental problem because it entails the freezing of high-level communications standards.
- A difficult problem of relationship between two industries because, from the standpoints of perfomance and investment, some functions traditionally executed by DP equipment must migrate to data communications equipment.
- A regulatory and legal problem because new cross-industry interface standards would have to be defined for terminals, the network and associated computer systems.

Hence, regulatory and standards-making organizations are likely to play a more dynamic and leading role in solving the coming problem of how to optimize LDD.

Rocher is the president of Telematic, Inc. in Millwood, N.Y.

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Portable Terminals Put Light on Energy Savings

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DANVERS, Mass. — A cost analysis system that uses an IBM 3032 mainframe and 38 portable terminals is saving commercial energy users between 20% and 50% on lighting costs.

GTE Lighting Products, a division of Sylvania Corp., developed a software package that allows its salespeople to give clients a breakdown of how many lights the clients actually need. The software package can also suggest the best type of light to fit a given situation, along with energy-saving devices to cut fuel costs.

The package, called Sylvania Information Analysis (Sylvia), uses Computer Devices, Inc. Model 1203 terminals equipped with acoustic couplers. Sylvania salespeople take the terminals to the clients' offices, where the data is keyed in. "Portable terminals offered the fastest turnaround time," according to Charles Currier, GTE Lighting's DP supervisor of marketing and financial applications.

Three applications programs are currently on the system — lighting economic analysis, relight energy analysis and group relamping analysis. The lighting economic analysis uses about 25 lines of data supplied by the user, including the length, width and height of the area to be illuminated. The salesperson provides energy costs, the type of lamps to be used and labor and cleaning costs.

Sylvia then returns the initial cost, total yearly operating costs and yearly owning costs, according to Currier. The salesman can reportedly change any line of data to give subsequent analysis.

The relight energy analysis program, Currier said, will return the savings from using energy-saving lamps. The output includes data on electricity and air conditioning savings along with an approximate payback period on the initial investment.

The group relamping analysis tells the user the best time to change flourescent lights. "As flourescent lamp gets older, its lighting output decreases," Currier explained. "It's better to replace all lamps at once than as they burn out."

GTE Lighting plans to add five more Model 1203 terminals and more on-line programs to the system, including impact analysis of remote control lighting, by using a device that shuts off lights at certain times of the day.

Analysis Tool Built for Nets With IBM 3270s

SIMI VALLEY, Calif. — A device that enables users of IBM 3270 remote bisynchronous protocol to determine the effect of both hardware and software changes on an on-line system has been introduced by Teleprocessing Products, Inc. The TP270 remote network analyzer measures system response in a network of 3270 CRT terminals. It also provides specific measurements of the elements contributing to response time so that if changes are made, their impact can be detected and evaluated.

The microprocessor-based unit can detect and measure the time intervals involved in all events associated with the line protocol from a central computer site, he added.

Monitoring traffic on the line in both directions at the EIA interface, the TP270 provides event counts and interval measurements based on the specific remote terminal address selected, Teleprocessing Products claimed, permitting the operator to inspect and project system loading, terminals, lines, modems and communications channels.

Equipped with an optional printer interface, the TP270 can generate hardcopy printouts of individual functions or a status report. An operator can restructure a network to deal with the volume of data being transferred at any of the individual terminals.

The TP270 is available for $2,195 from Teleprocessing Products at 4565 E. Industrial St., Building 7K, Simi Valley, Calif. 93063.

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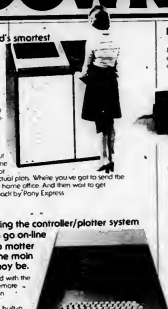

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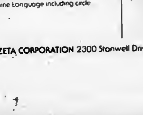

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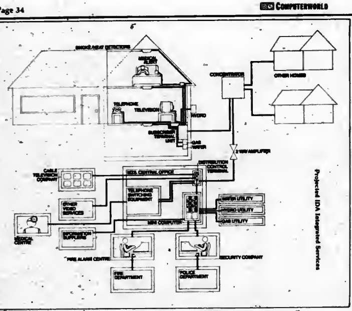

Projected IDA Integrated Services

Ida will deliver many services via coaxial cabling. More than 20 independent suppliers will share the network.

National Semi Offers CRT/Keyboard Boards

SANTA CLARA, Calif. — Two intelligent single-board CRT/keyboard controllers are available from National Semiconductor Corp.

A user can construct an intelligent terminal display by adding a keyboard and CRT. Designated the BLC8228 and BLC8229, each board provides an 80-character by 24-line display for blinking, inverse video or alternate character.

Standard control functions include editing by character or by line, formatting and software-selectable scrolling for each line. Both boards are based on 8080A microprocessors with 2K bytes of "standard control firmware," screen refresh memory, character refresh memory, character attribute memory and 1K byte of scratchpad memory, according to the vendor.

The BLC8228 offers a 5 by 5 dot matrix while the BLC8229 has a 7 by 9 matrix and can be ordered with additional CRT operations.

Diagnostic programs are included on-board; each board has sockets for a user-implemented alternate character set. The boards communicate with a host computer a byte at a time, interrupt-or status-driven, and by block transfer to memory via direct memory access.

The BLC8228 costs $927, while the BLC8229 costs $1,133 from National Semi at 2800 Semiconductor Drive, Santa Clara, Calif. 95051.

Project Ida Slated

(Continued from Page 31)

— a very expensive proposition in rural and northern Manitoba, the spokesman noted.

"Headingley was chosen as the trial site since the area is scheduled for telephone network upgrading and the trial can be economically incorporated into the improvement plans," he added.

To date, more than 20 companies have reportedly expressed interest in acting as sources for the information dispensed through Ida.

Prospective Videotex sources are said to include the *Winnipeg Free Press*, the *Winnipeg Tribune*, the *Toronto Star*, Cybershare Ltd., Home Information, Inc. and Southam Press.

Among the " possible uses of Ida". listed by Manitoba Telephone are digital telephone service; "teleshopping"; two-way, interactive "video school"; electronic mail; electronic newspapers; yellow pages; library services; a guide to new and used cars; income tax advice; electronic funds transfer; and "general government information."

By 1981, Manitoba Telephone also plans to develop the "Farm of the Future" with a fiber-optic system.

Units From OCP Eliminate Modems

NEW YORK — OCP, Inc.'s series of modem eliminators are intended to replace the Bell 103-J or equivalent modems on short distance (less than 1,000 wire ft) connections.

The eliminators support asynchronous start/stop terminals at speeds up to 9,600 bit/sec, OCP said. The devices are smaller and less expensive than the modems they replace without requiring ac power, the vendor claimed.

A single eliminator unit costs $65 from OCP at 353 Lexington Ave., New York, N. Y. 10016.

Electronic Mail Session Set

BOSTON — The Yankee Group's third annual Symposium on Electronic Mail, to be held Sept. 12-13 in New York and Sept. 17-18 in Palo Alto, Calif., will focus on cost justification for electronic mail.

The seminar will present techniques for cost-justifying electronic mail systems for diverse applications and will examine the options now available to users, including verbal mail systems, sophisticated text editing systems, voice recognition and others, according to a spokesman.

The symposium will identify and analyze new and anticipated product offerings from IBM, Wang Laboratories, Inc., Digital Equipment Corp. and others.

In New York, the symposium will take place at the Harvard Club and, in Palo Alto, at Rickey's Hyatt House. It costs $590, and registration is through The Yankee Group at Floor Four, 21 Merchants Row, Boston, Mass. 02109.

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Expected This Year From Users

Fiber-Backed Distributed Systems on Their Way

By Del C. Hanson
Special to CW

During the past year, there has been a major expansion in the use of fiber optic data links for applications of computer systems.

The component design approaches currently employed are quite different from those in telecommunications systems. These approaches include discrete electro-optical transducer elements; integrated transmit/receive (T/R) modules that incorporate custom integrated circuits; internal optical line coding; and integral single fiber connectors for use with arbitrary data formats.

But the fiber optic data link market is now experiencing:

- A confusion of design alternatives and cost/performance tradeoffs for terminal components, connectors and fiber/cable.
- Unknown or unstated environmental and reliability objectives for individual components.
- A lack of standard interfaces.

This article was adapted with the author's permission from his contribution to Compcon '79, the international conference sponsored by the Institute of Electrical and Electronics Engineers.

Will a single industrial fiber design predominate? The question hinges on whether broad acceptance will develop for a general-purpose, relatively large core diameter (10 mm) fiber with a high numerical aperture (NA) — at least .30 nominal. (NA indicates the amount of light a fiber can conduct.)

The table on Page 38 summarizes the physical parameters, performance and current prices of five representative types of fiber/cable available for industrial applications.

All-plastic fiber (Type 1 in the table) and high NA glass fiber (Type 2) are restricted to short-haul use — where the link extends less than 100 meters — and have complementary properties.

Type 1 has the advantages of durability and large core diameter, but is restricted in temperature range, optical attenuation (the decrease in intensity with distance) and wavelength window (the fiber's nonporous covering; essentially transparent to electromagnetic transmissions). Type 2 fiber has many desirable properties, but involves a serious problem with mechanical reliability.

With respect to price/performance tradeoffs, a question persists as to whether the present interest in plastic-clad silica (PCS) fiber (Type 3) is a short-term phenomenon that will disappear with the proliferation of the less environmentally sensitive Type 4 fiber, which is intended especially for industrial use.

Conversely, the higher volume of parabolic-index, small-core glass/glass fiber (Type 5) manufactured for telecommunications systems could undercut the price of larger core industrial glass/glass fiber, retarding the latter's penetration into applications.

The primary concerns with PCS fiber are more difficult connector termination; attenuation increase at low temperature and/or high humidity; and a narrower transmission bandwidth without the ability to optimize the core index profile. PCS may be desirable, however, if a substantial price differential exists long term and for nuclear radiation environments.

Absolute answers to these choices will only be confirmed with time and will be much more strongly influenced by long term reliability considerations than is evident today.

Terminal Interfaces

What about interfaces with computer terminals? There are a vast variety of optical connector alternatives, ranging from fiber alignment — via discrete plastic ferrules or concentric metallic ferrules — to precision-molded plastic terminations and diamond ferrule in-

(Continued on Page 38)

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You can expand 256K bytes of error-correcting main memory to one megabyte for large data sets and big programs. And with the addition of separate disc units, the system can accommodate up to 490 megabytes of on-line disc storage.

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HP's proprietary silicon-on-sapphire technology put the CPU logic onto six CMOS chips for greater speed and reliability, and lower power requirements.

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The HP 300 can support up to 16 terminals, by direct connection or via a modem.

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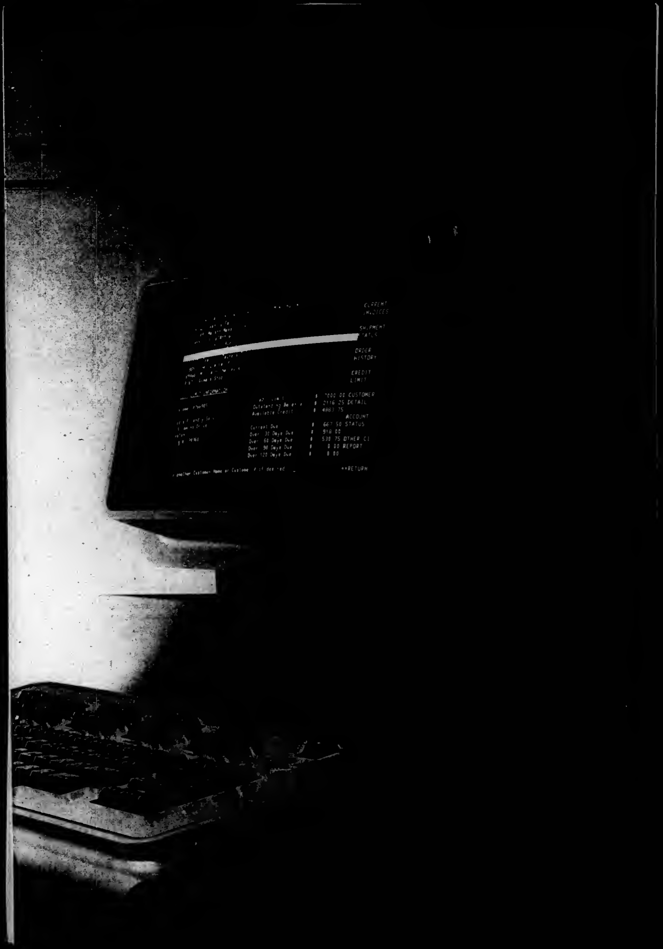
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Systems Distributed via Fiber Optics Coming

(Continued from Page 35)

serts.

Major user concerns are that field assembly tooling be inexpensive and allow nonspecialists to meet optical requirements. This is currently difficult because of the wide range of parameter variation in fiber, cable and connectors. Moreover, the finished connector asembly must withstand loading, temperature cycling and related environmental tests.

An integrated approach to fiber optic link design calls for a balance in performance and cost between the individual components. For industrial, single-fiber connectors, this requires that the connector have worst loss at no more than 2 dB and an installed mated pair cost of less than $10 in high-volume assembly.

Many different types of discrete fiber optic terminal components have been introduced on the basis of a vendor's technological strengths and its desire for early market visibility. Integrated terminal components have also been introduced that contain custom-integrated circuits to handle general-purpose data formats and provide a continuous link monitor.

The potential advantage of using discrete components is more flexibility in a particular link design. However, integrated terminal components have the advantages of easier installation and use, functionally compatible interfaces and potentially lower cost in volume production.

Clearly the size, performance and potential cost advantages of optical fiber links will invite additional functional integration of interface circuits, advanced LED sources, lower cost connector and packaging techniques to provide lower cost, easier use and more reliable terminal components.

The final dimensions and parameters of standard optical ports will not be resolved for a few years, but acceptance of certain vendor options will be so general that users will start designing fiber-supported distributed systems this year.

Hanson is the fiber optics project manager at Hewlett-Packard Co.'s Optoelectronic Division in Palo Alto, Calif.

No.	Fiber Type	Glass Diameters		Fiber Proof Test	Simplex Cable			Optical Parameters		
					Jacket Diameters		Vendor	N.A. @ 10% Int.	3dB Bandwidth	Attenuation @ 820 nm
		Core	O.D.		Inner	Outer	Cost (>10km)			
		(μm)	(μm)	(k psi)	(mm)	(mm)	($/m)		(MHz·km)	(dB/km)
1	All Plastic	360 (Plastic Materials)	400	?	1.20	1.8	DuPont 1.00	≥.40	≥5	≤600
2	High N.A., Glass/Glass	204	240	20	2.0	3.5	Galileo (3000 LC) 1.10	≥.40	≥5	≤60
3	Plastic Clad Silica	200	200	100	2.0	3.0	Belden, etc. 1.45	≥.22	≥10	≤15
4	Computer/ Industrial Glass/Glass	100	140	100	1.0	2.5	ITT 1.75	≥.30	≥20	≤10
5	Telecommunication Glass/Glass	62	120	20	1.4	3.8	Siecor (133) 0.75	≥.21	≥100	≤10

Certain Industrial Fiber/Cable Types

Hand-Held Terminal Introduced

SANTA MONICA, Calif. — A hand-held 6- by 3-in. terminal that can be used for fault diagnosis, information retrieval and small-scale programming has been introduced by GR Electronics, Ltd.

The Pocket Terminal sends and receives all 128 Ascii character codes. Received data is held in a 30-character memory for access in 8-character blocks on its built-in, 16-segment alphanumeric LED display.

According to the English manufacturer, the terminal can display a "clear, correctly formed 64-character upper case alphanumeric and symbol set."

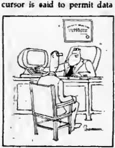
The terminal has 40 "positive response" keys that allow transmission of 8-bit words with presettable parities and start/stop bits. A controllable cursor is said to permit data entry in a variety of formats as well as the editing of information in a host computer's memory.

Selectable Rates

The Pocket Terminal links to the host through a 25-pin connector and an RS-232C interface. Power requirements specify a 5V power supply with a maximum output of 450mA. The user can select a transmission rate of 110- or 300 bit/sec.

The onit includes a repeat function and an internal "bleeper" that reacts to the BEL control code, GR Electronics said.

The terminal costs $395 from the vendor's U.S. affiliate at 1640 Fifth St., Santa Monica, Calif. 90401.



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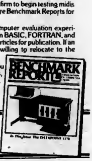

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Trendata Teleprinter Offers Operation at 45 Char./Sec

SUNNYVALE, Calif. — A microprocessor-controlled terminal incorporating a 45 char./sec daisy-wheel printer is available from Trendata Corp.

The Model 4000B offers full- or half-duplex communications as well as Ascii, ECBD or Correspondence coding. The printer is capable of printing up to six copies and features selectable print intensity.

Operator-oriented features of the 8080-based terminal include control keys grouped so they will not interfere with typing, Trendata said. To protect against inadvertent actuation, the control keys are colored and spring-loaded.

The terminal includes nonglare status indicators for terminal and system conditions. Also included are a 14-key numeric pad and three operator-programmable delimiter keys, Trendata said.

An optional unattended operation mode enables the 4000B to answer incoming phone calls and to receive data without operator intervention. When transmission is completed, the 4000B automatically restores the line to on-hook condition, ready for the next call, the vendor claimed.

Priced at $4,395, the 4000B can be leased on one- two- or three-year plans, including vendor maintenance. A full line of supplies and peripherals, including the Series 500 flexible disk system, is said to be available from the vendor at 610 Palomar Ave., Box 5060, Sunnyvale, Calif. 94086.

Terminal Subs for VT-52

GREENLAWN, N.Y. — A terminal compatible with the Digital Equipment Corp. VT-52 but with added key functions, programmable key switch audio feedback and editing functions is available from Hazeltine Corp.

Based on Hazeltine's Model 1500, the Model 1552 terminal offers "total software compatibility" with VT-52 applications and provides "superior" 7 by 10 dot-matrix character resolution on its 12-in., 1,920-character screen, Hazeltine claimed.

Terminal Features

The Model 1552 incorporates an EIA and 20mA current-loop interface, eight selectable transmission rates up to 19.2K bit/sec and an auxiliary EIA output. Screen functions include remote editing commands, standard or reverse audio, field tab and insert or delete line, Hazeltine said.

In addition to the functions of the Model 1500, the 1552 adds separate cursor control keys, a graphics mode, function keys, a hold screen mode and an alternate keypad mode operation that transforms the separate numeric keypad into a function key cluster.

Hazeltine has priced the Model 1552 at $1,500, it said from Cuba Hill Road, Greenlawn, N.Y. 11740.

Phone Router Has Six Ports

WORTHINGTON, Ohio — Commander Systems, Inc.'s latest active, long distance control system comes with up to six ports to reduce charges from specialized communications carriers.

The tabletop least-cost routing unit includes a controller and CRT. A 75 char./sec Texas Instruments, Inc. Model 825 receive-only printer is optional.

"Until now, organizations with long distance bills of less than $6,000/mo have been unable to secure an economical active control system," a Commander spokesman said. "This new unit, handling up to six outgoing ports, covers that segment of the market which found [Commander Systems'] Wats Commander too sophisticated."

As with the Wats Commander, the system operator dials the host CPU, identifies his station, places his long distance call and hangs up.

When his turn arrives, the unit calls him back and speed-dials his long distance call.

The system can be leased for $500/mo from Commander Systems at P.O. Box 494, Worthington, Ohio 43085.

Options Turn System 3000 Into Terminal

BOULDER, Colo. — NBI, Inc.'s System 3000 word processing (WP) system has gained communications options that offer point-to-point and full asynchronous computer communications.

Both levels of communications offer asynchronous protocol, transmission speeds from 50- to 9,600 bit/sec, the ability to operate over phone lines or hard-wired facilities, background operations and an EIA standard RS-232C interface, NBI said.

The point-to-point mode permits the System 3000 to transmit to disk or receive a mirror-image copy of documents recorded on disk. All codes and instructions are transferred from one disk to another, permitting distributed copies to be edited and revised, NBI said.

Documents can also be sent or received in the background and recorded on disk while the operator continues to create or edit documents on the screen, a spokesman added.

By adding the computer communications package, users can transmit to processors or intelligent terminals using Ascii or IBM 2741 correspondence codes and asynchronous teletypewriter or teletypewriter exchange service protocols. Users can tailor the code sets and protocols to match the requirements of their applications, NBI claimed.

The point-to-point option is priced at $1,000 on NBI's single- or dual-station System 3000, while the package with point-to-point and full synchronous computer communications modes costs $2,500 from NBI at 1695 38 St., Boulder, Colo. 80301.

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During August, Bert, Len and tha MTI folks are selling the ideal 300 Baud office printer terminal for $1150. The LA34 is small, quiet, typewriter-like in use, with 128-character ASCII set and 9X7 dot matrix impact printing.

The LA34 keyboard selectable features include printing speeds of both 30 and 10 CPS, 6 different vertical and 4 different horizontal spacings. The LA34 can actually print a 132 column line on standard 8½X11 paper. This means computer printouts and communications can be easily stored in a standard filing system.

At $1150, the LA34 is an exceptional value. Exceptional also describes MTI service. Our reputation for dedicated service to our customers has helped keep MTI growing for twelve years. So this August get both. Get the perfect office printer, and a taste of MTI service. Bert, Len and the crew will settle for a little less money and a little more love. Call us today. The numbers are:
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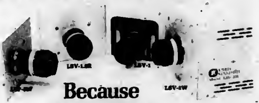

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LSV-2W	1400 x 1800	2200	38 mm

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Recorder Accepts RS-232 Data

NEEDHAM HEIGHTS, Mass. — The ability to accept RS-232C data as well as format and write this data on certified digital cassettes are two features of a magnetic tape recorder unveiled by the Memodyne Corp.

The Model 343CV consists of a tape transport, formatter and driver card, universal asynchronous receiver/transmitter card and a function control card.

The tape drive is mounted on a panel containing all of the function switches; it can not only play back and transmit data in an RS-232C mode, but can also handle Teletype data from a 20mA current-loop, a Memodyne spokesman stated.

Transmission rates of 110-, 150- and 300 bit/sec are available in both read and write modes. The 343CV can read continuously at 1,200 bit/sec.

Standard Features

Standard features include push-button switches for functions and negative TTL or CMOS generated signals for tape movements in all modes, the spokesman added.

The unit has a storage capacity of more than 72,000 word/cassette and a stand-by mode power drain of less than 55mA.

With OEM discounts available, the unit singly priced at $1,295 from the firm at 220 Reservoir St., Needham Heights, Mass. 02194.

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Versitron Has Fiber-Optic Modem

WASHINGTON, D.C. — A fiber-optic modem designed for local distribution applications is now available from Versitron, Inc.

The FOM-3 provides full-duplex operations over a pair of fiber-optic cables at data rates up to 56K bit/sec synchronous or 9,600 bit/sec in an asynchronous mode.

Fully Transparent

The modem is said to be suitable for DTE/DCE interfaces since it appears fully transparent to all clock and data signals.

FOM-3 features a full EIA interface with interactive handshaking.

Control signals are multiplexed along with the data to provide positive DCE control, Versitron said.

The FOM-3 is available with precut and terminated fiber-optic cables for $650 from the vendor at 6310 Chillum Place N.W., Washington, D. C. 20011.

Beekeeper Stores Data Off-Line For Beehive Units

IRVINE, Calif. — An auxiliary storage device that can reportedly be used to reduce the cost of entering data through Beehive International, Inc.'s B500, B550 and Micro B/-DM10, B/DM20 and B/-DM30 CRT terminals is available from Digital Datacom, Inc.

The Beekeeper is based on 3M Co.'s DC100A cartridge drive to operate under terminal control in preparing information for later transmission to a host CPU, Digital Datacom said.

The Beekeeper records data off-line onto the cartridge for high-speed transmission, which reduces connect time and communications line costs, the vendor said.

Bidirectional Search

The unit operates at 30 in./-sec with bidirectional search speed of 60 in./sec, the firm added. The parallel data transfer rate from the device to the terminal was put at 3,100 byte/sec.

The Beekeeper costs $1,895, including power supply, cabinetry and cartridge drive. Digital Datacom is located at Suite K, 17951 Skypark Circle, Irvine, Calif. 92714.

FCC Decisions Published

WASHINGTON, D. C. — Two resource documents relating to decisions of the Federal Communications Commision (FCC), including the FCC's tentative decision on common carrier entry into competitive data processing markets, is available from the Computer & Communications Industry Association (CCIA).

"Common Carrier Cases, 1936-1978" summarizes federal appellate decisions and includes a digest, index, table of cases and briefs of court opinions. The 183-page document costs $27.

The second offering, "Second Computer Inquiry — Tentative Decision and Further Notice of Inquiry and Rulemaking," includes a background of both Computer Inquiries, comments by interested parties, the FCC decision and statements by FCC officials. This document costs $10.

Both publications can be ordered from CCIA's Document Services Department at Suite 512, 1500 Wilson Blvd., Arlington, Va. 22209.

Aries Now Figures Costs Of Other Vendors' Service

BETHESDA, Md. — Recently announced enhancements to Scientific Time Sharing Corp.'s Aries circuit-optimizing system will reportedly allow users to price the private line services of other common carriers.

The enhancements allow analysts to specify as a network all circuits leased from MCI Telecommunications Corp., United States Transmission Systems and others.

The Aries program can then verify that the vendor services the points on the network, determine any total channel mile or bulk channel discounts offered by the vendor, determine if any exceptions apply, price the network — showing mileage and termination charges — and store the network in the analyst's network inventory for later reference.

As before, the analyst can specify locations for Aries by area code and exchange, city name and state abbreviation and zoned city identification. Aries automatically checks that the analyst's input is valid and looks up the vertical and horizontal coordinates and tariff information for each location, the company claimed.

The enhancements are included in Aries at no charge from the vendor at 7316 Wisconsin Ave., Bethesda, Md. 20014.

WPs Tied To IBM CPUs

NEW YORK — A batch interface that allows operators of Wordstream Corp. word processing (WP) systems to communicate with computers employing IBM 2780 binary synchronous protocol was introduced here by Wordstream.

The interface, part of the Wordstream 701 communications processor, enables the WP system to work in conjunction with IBM 370 or 370-compatible mainframes.

Communications can take place over switched or private phone lines, remotely via modem or hard-wired connections, end at rates up to 2,400 bit/sec for remote operations or up to 4,800 bit/sec for hard-wired applications.

The interface costs $1,000 from Wordstream, located at 300 E 44 St., New York, N. Y. 10017.

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CLEVELAND – When is less more?

For tha Clevaland Trust Co. less is more whan two mainframes can do tha work of four, doubling capacity and improving afficiency at the sama time.

Tha state's largest bank, Clavaland Trust recently replaced three 2M-byte IBM 370/155s and a 4M-byte 370/158 with a pair of 8M-byte Amdahl Corp. 470/6-IIs. DP capacity incraased by a factor of 2.6, and power costs will drop by approximately $7,000 this yaar, according to Jeffrey W. Berno, a computar systems officer with the bank.

With assets of approximately $6 billion and 80 branches in Cuyahoga County, tha bank plans to convert some of its nina affiliates to branches and centralize many computer applications. This became possible whan tha state legislatura passed a law last year allowing banks to expand beyond county boundaries.

Work Ran Late

Before installing the Amdahl computers, tha bank ran a wida variety of on-line and batch applications, including check processing, cash dispensing, customer inquiry, stock transfer, demand deposit, time deposit, financial control and credit card operations. But it also ran into serious scheduling and processing problems.

In tha Deposit Accounting Department, for instance, tha morning reports concerning tha previous night's check processing somatimes came in late. "When this happened, we couldn't raturn bad checks to the clearinghouse in time," Department Manager Kenneth C. Sainsbury said.

As a result, we sometimes had to take responsibility for losses associated with checks that had insufficient funds, and we were vulnerable to fraudulent check schemes.

"On top of that, we had to pay our employees time and a half to get the work done after regular hours."

In 1976, tha bank evaluated the performance of its computer system, which at that time included three IBM 370/155s. To increase performance, Berno said the computer department did everything it could to improve the performance of existing equipment.

This included reconfiguring the system, getting more efficient software and rescheduling applications to low-processing periods.

Although these actions brought greater afficiency, tha growing workload called for more radical action.

Buying Time

In October 1977, a 370/158 was leased to provide anough temporary processing capability to allow an evaluation of long-term alternatives. This evaluation of various IBM-compatible vendors was begun in January 1978 and was based upon prior evaluations in 1974 and 1976.

Using criteria such as performance, cost, vendor support and reliability, tha depart-

(Continued on Page 43)

Modernization Has Little Effect On Auditor's Anxieties: IBMer

By Tim Scannell
CW Staff

DENVER – Although auditing techniques hava changed considerably from the days when an adding machine tucked under tha arm was an ample amount of equipment, an auditor's anxieties and faars ara still basically tha same.

Whether information is kept on stone tablets, papyrus leaves or magnatic tape, auditors – especially those of the DP variaty – grow increasingly nervous when the recording media is changed, according to William H. Murray, a sanior markating support administrator in IBM's Data Security Support Programs Department. This universal anxiaty is particularly high today because of such things as disks and magnetic tape which were designed to be used ovar and ovar, laaving auditors dependant on audit trails and procedure controls to maintain computer system integrity.

Speaking before an audience of seemingly "cool" DP auditors at a recent confaranca hare, Murray sympathized with his listenars and outlined what ha thought an almost perfect audifor-orianted computer system would be like.

First of all, tha auditor would be able to view the system's oparations through an intelligant CRT, – either a user's or a personal, portabla tarminal – with both a printer and storaga capabilities. From this terminal connected to a user or special port, the auditor could test for access security and review tha system documentation for accuracy, completeness and consistency.

Tha documantation available to the auditor would be tha same used by the users to understand the system, the application, its con-

(Continued on Page 44)

Conglomerate Finds Order Entry Need Not Be Complex Process

By Connie Winkler
CW Staff

NEW YORK – With all the complex hardware and softwara around, computer users are sometimes tempted to design systams to exarcise every last faature of their "toys." In the process, they sometimes forgat that tha aim of a computer system is to do work, not be a technological marvel.

Ona example of designing to meet business needs instaad of to show off the latest gadgatry can be found hare at Loews Corp., whera a simple – some might say rudimentary – order entry system comes nowhere close to matching the rest of tha company's hardwara sophistication. But it works, and works well, for Loews.

Although an IBM 370/145 and a 3031 form tha haart of tha company's DP operations, a cigarette order system used by the company's Lorillard Tobacco Division is formed around 70 IBM 3741 workstation's, tended by humans. It may not be fancy, but it's eminantly practical, according to Michael N. Raiser, assistant vice-president of management information systems (MIS) for the conglomerata, who believes practicality

(Continued on Page 43)

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Simple Order Entry Put on Sophisticated CPUs

(Continued from Page 41)

is "what it's all about."

Loews Corp., a conglomerate made up of Lorillard, Loews Hotels, Loews Theatres, CNA Financial and Bulova Watch Co., davotes a larga part of its MIS work to the Lorillard subsidiary. Throughout tha day, orders for Kents, Newports and other cigarette brands as well as other products — cigars and chewing tobacco — are transmitted to tha 3031 from a nationwide natwork of 150 terminals.

These orders come into the 3031, which shares its files with the 370/145 used for batch work. The Model 145 than batches the ordars by time zone so they can be sent to one of the firm's 80 warehouses by 1 p.m. local time. The orders are written onto individual diskettes.

It is at this point that things get simpler, Raiser explained. Employees bring the diskettes from the Model 145 to a 3741 workstation, dial the number of the warehouse and transmit the orders.

A Boon in Emergencies

This 3741 system has meant great savings, not only in tha year and a half it would have taken to develop advanced teleprocessing capabilities, but because it took only 30 days to install several years ago. "The computer can't do it much faster than this because it's constrained by telephone lines," Raiser said.

And tha biggest advantage is in an emergency. Last year during New York City's power blackout, Loews employees simply packed up the diskettes and drove to another 3741 at a Naw Jersey watahouse, where there was electricity.

The flexbility of this application is mirrored in all aspects of Loews DP shop. "For example, our 3031 business can run on the 145," Raiser said. "In planning, we allow for flexibility and compatiblity — we are sticklers on it.

"We rely on replacement and substitution for problem determination," Raiser continued. "Eighty percent of our problems are resolved within five minutes by means of substitution and isolation.

"We are not a 'vanilla' shop," he said, explaining the shop has a good daal of both hardware and software from non-IBM sources. The result is an interesting cooperation between Loews and its vendors.

"We have found that from the smallest corporation to IBM and AT&T, [our vendors] will listen to people who are specific and explicit about thair problems," Raiser said.

In addition, many vendors believe the Loews DP staff is "very technical" and Loews occasionally ends up doing second-stage debugging on software. Tha firm has 35 development staff members in New York and at Lorillard in Greensboro, N.C., and fewer than 10 technical support employees in New York.

One example of this mix of independent vandors is tha Grasp package from Software Design, Inc. The package runs on both the 145 and tha 3031.

Three Networks

There ara three terminal networks within tha company. One for remote job entry with 15 IBM 3777 terminals is the output network for all batch processing. (There's no data entry in tha DP shop because MIS management believes users know most about their data and how to handle it.)

A second network is the 150 IBM terminals and printers and Trivex, Inc. CRT's around tha country for Loews' approximately 300 applications. This teleprocessing network uses Codex Corp. and ICC/Milgo modems.

Loews is also practical when it comes to the operator console. Instead of the standard typewriter console, three IBM 3277 terminals are at eye level in command center fashion. The terminals give better performance than the typewriters, Raiser said.

Raiser believes Loews' MIS operation would not be possible without tha total support of management. "The best thing we have going as a computer department of a Fortune 500 Corporation is [management's] belief that you need information to manage a business — it's a great backbone for a computer department."

Bank Turns Less Into More, Trades Four CPUs for Two

(Continued from Page 41)

ment narrowed down tha alternatives to IBM and Amdahl. The bank's future workload projections showed that it needed more capacity than that provided by two IBM 3032s or two 370/168s, but less than that provided by two 3033s.

"The decision to go with two Amdahl 470/6-IIs was really a price/-performance decision," Berno said. "Tha cost of the two Amdahl computers was approximately that of our previous four computers if we had purchased tha 158 instead of leasing it.

"Our cash flow analysis showed that the Amdahl would fit in better with our long-range processing projections than the 3033s. The Amdahl computers were more cost-effective in terms of overall purchase price, site preparation and sales tax," Berno explained.

"Unlike the 3033s, they were air-cooled, which meant we wouldn't have to put in special plumbing. They required less space, which is at a premium in our center. Moreover, Amdahl offered us excallent software and hardware support and has been helping us to bring tha computer up to speed in our mixed shop."

More From Less

The bank's Amdahl systems, installed in late 1978, are currently running under MVT, but will soon be converted to MVS and JES2. The peripherals attached to these systems come from a variaty of vendors and include more than 30 tape drives and 30 disk drives from Storage Technology Corp., two Model 1200 page printers from Xerox Corp. and more than 200 terminals from IBM, Four-phase Systems, Inc., Harris Corp. and Courier Terminal Systems, Inc.

"One of the advantages of the new system, from tha operational point of view, is that two systems are much easier to schedula than four," according to Kenneth R. Otto, asssistant vice-president.

"Shared resources, such as tapes and disks, can be a large bottleneck with four computers. More mainframes sharing the same resources results in contention by tha mainframes. Tape drives, for example, were constantly being switched from one computer to anothet, which ultimately led to operator errors.

"This high degree of operator involvement, coupled with the mainframes' contention for the resources, resulted in processing delays and poor throughput," Otto explained.

When the sytem first went up, according to Otto, execution time improved by 47%. "This figure will improve even more when the fine tuning and our conversion from MVT to MVS is completed," he predicted.

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Bits & Pieces

Dataproducts T-80 Gets Graphics Option

WOODLAND HILLS, Calif. — Dataproducts Corp. has announced a graphics option that permits users of its T-80 thermal matrix printer to print either text or graphics.

The option uses a raster scan technique, energizing any one of the seven vertical dots available, so users can quickly display graphics information, Dataproducts said. The spacing of 70 dots/in. horizontally and vertically gives the system a maximum density of 4,900 dot/sq. in.

The option, priced at $100, is available as a field upgrade. Printers sold with the option installed cost $1,330 in single quantities or $875 each in quantities of 100.

Dataproducts is located at 6219 De Soto Ave., Woodland Hills, Calif. 91364.

CDC Brings Out Printer Compatible With IBM 1403

MINNEAPOLIS — Users of IBM printers gained another choice recently with the announcement by Control Data Corp. of an IBM 1403-compatible printer. The CDC 32111-1 Fastrain printer prints 2,000 line/min with a 48-character set, a spokesman said.

The unit, which incorporates printer and controller into a single cabinet, has features that have become standard in the world of high-speed printers: 132 columns printed at 10 char./in., 6- or 8 line/in. vertical spacing, paper tape carriage control and the ability to print up to six copies.

Other 32111-1 features include an off-line, integrated maintenance panel with a channel simulator that allows fault isolation and diagnostics to be performed while printer operations continue. It also offers dual universal character set buffers and the ability to detect nonprintable characters, sent from the host system, before the print cycle begins.

The printer sells for $67,000 and leases for $1,760/mo on a one-year lease or $1,600/mo on a three-year lease. Maintenance costs $996/mo for 168 hour/week service.

First shipments of the unit, which are manufactured by the Computer Peripherals, Inc. subsidiary of CDC, are scheduled to begin in the third quarter of the year.

Antistatic Mats and Runners Protect Electronic Equipment

WESTWOOD, Mass. — A line of nylon mats recently introduced by United Technical Products, Inc. is guaranteed to keep static charges below levels at which they will cause damage to electronic gear.

The mats are available in four colors and in 3-by 5-, 4-by 6- and 4-by 8-ft sizes. Runners are available in lengths up to 60 ft.

Mats start at $67.50 each, and runners cost $13.50 per linear foot, the vendor said from 23 Southwest Industrial Part, Westwood, Mass. 02090.

Modernization Not Easing Anxieties of DP Auditors

(Continued from Page 41)

trols and the operations environment, Murray noted.

Within the software, all applications would be divided into functions related to different organizational levels. Each of these applications or activities would, in turn, be subdivided by transactions. The transactions would be indexed according to the users responsible and the sensitivity of the data, Murray continued.

Next, checking on the operating system's journal entries and data base, the auditor would test to see if the entries were properly time-stamped and sequence-numbered. The DP investigator would also make sure the journals accurately referenced the user, the terminal; the transaction, the procedure, the updated records and any external source documents and confirmations.

Since a great many computer systems have a problem with disappearing source documents and other hard-copy output, this particular system would replace those documents with real-time transactions. Original entries would be stored on magnetic media, according to Murray.

Application programs within this auditor-geared system would not only be unavailable to the program authors, they would be under the control of the authors' managers — allowing for internal checks and balances. The programs would be short (composed of 50 instructions or verbs), contain limited branching paths and be apparent in their intent, Murray said.

In addition, the programs would be well-documented and reference data and equipment only symbolically; never directly naming physical storage or a device.

A Few Assumptions

Although the auditor's window into the computer depends on the terminal itself, there are a few assumptions surrounding such an idealized system, Murray said.

First, it would be assumed that the auditor have an independent computer system to keep track of all the winding trials within the main computer as well as a general interface on the mainframe in which to plug the auditor's machine. It would also be assumed that the computer system have the ability to authenticate and identify users, something that is rarely applied and even then not consistently, Murray said.

The system would also have to be structured into "domains of control and controllable domains," like applications and transactions, the IBM executive pointed out. Unlike current practices, programming in this system would be a controllable application such as a transaction-driven system in a business environment.

However, this auditor-perfect system would not stop at hardware and software niceties. The auditor must be an advocate for good practice and a willing customer for services which provice visibility into the system and organize data for the audit, Murray said.

Bundles Software, Cuts Memory Cost

HP Reduces Prices of 3000, 300 Minis

PALO ALTO, Calif. — By Bundling some previously optional software packages and cutting add-on memory prices more than in half, Hewlett-Packard Co. has reduced the overall costs of its high-end 3000 and recently introduced 300 minicomputers by 12% to 18%.

HP included such software as its runtime libraries, Image data base management system, Ksam file management system and View data entry formatter into the processor, "base configurations," shaving about $6,000 from the 3000's price tag and about $2,000 from the 300's.

In addition, HP reduced add-on memory prices from more than $30,000 per 1M byte to about $15,000, further trimming the minicomputers' costs.

The HP 3000 Series III with the above software and 1M byte of memory now costs $165,000 instead of $135,000. The larger 2M-byte HP 3000 was cut from $162,500 to $132,750.

The price of the firm's 3000 Series 33 with 1M byte of memory was slashed by 17%, from $88,500 to $73,500, and the HP 300's cost was reduced from $61,000 to $50,000.

While the minicomputers' hardware prices weren't altered, HP decided to bundle the software and discount the add-on memory to "make the cost of ownership a lot more viable and a lot easier to calculate," according to an HP spokesman, Bob Bond. "Since 80% to 90% of our customers buy these particular pieces of software — we felt that it was better to have an executable package we could sell to the customer so he wouldn't have to buy these things separately."

Software Support Options

In the same vein, HP also substituted some less expensive software support alternatives for previous across-the-board mandatory support charges.

"In the past, we had required all of our customers during the first four years the system was installed to buy what we called 'comprehensive software support' " Bond said.

The support entailed periodic software package updates, an over-the-telephone consulting service and other benefits.

"Now we give the customer a wider variety of options. For example, many of our customers have multiple installations or multiple sites so, in addition to the comprehensive suport, we offer a version for multiple sites."

Under such a plan, a user with 10 HP sites could potentially lop up to 6% off formerly required support charges, Bond explained.

Moore Business Forms Plans September Debut of Turnkey

GLENVIEW, Ill. — Although usually associated with paper products, Moore Business Forms, Inc. will dive into the small business computer pool this fall when it introduces a microprocessor-based turnkey system.

Scheduled for unveiling on Sept. 15 by the firm's Moore Business Systems Division (MBS) the MBS 20/50 is built around Texas Instruments, Inc.'s DS990-1 processor, which is at the low end of TI's DS990 line. Targeted for small to medium sized business users, the MBS 20/50 will reportedly feature all of the hardware of the TI package, with a number of software exceptions.

The MBS system is a single-user micro with 64K bytes of random-access memory and two communications ports. The unit has a typewriter-like keyboard with cursor and numeric control pads, several programmable keys and built-in terminal status lights.

A 1,920-character CRT and 2.3M bytes of expandable floppy diskette storage are also included with the system. Topping off the 20/50 unit is TI's 150 char./sec Omni 800 Model 810 printer featuring a 96-character set and a 132-column wide printing capacity, a spokesman noted.

Although specific details weren't available at press time, Moore plans to market the system on an industry-specific or vocational basis. That means software packages and programs will be tailored and incorporated into systems according to the user's individual needs, the spokesman said.

Ten industries will be addressed by the computer's September debut and up to 160 will be added later, he said. In addition, Moore will offer five basic business packages, including payroll, accounts receivable, accounts payable, general ledger and inventory.

With hardware, software, implementation and system support services, the MBS system will cost about $15,000. As part of its marketing strategy, Moore plans to offer the user all the necessary supplies and related products, such as magnetic media, printer ribbons and custom forms.

Additional information can be obtained from MBS at 1205 N. Milwaukee Ave., Glenview, Ill. 60025.

New Approach to DP Security: A Portable Computer Room

By Marguerite Zientara
CW Staff

NEW YORK — What you see in the picture to the right is neither the baby robot from "Star Wars" nor the latest in tin cans. It is, rather, a portable computer room developed by Transaction Security, Inc. (TSI) to enhance DP security.

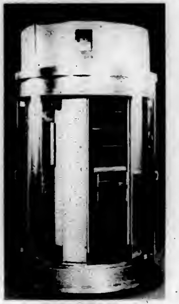
The unit was also designed to save space, energy and overall operation costs, according to the manufacturer.

Enclosure 48 is a prefabricated cylindrical capsule that houses minicomputers, microcomputers, tape drives, disk drives, automated teller machines (ATM) and other DP equipment. Its basic design philosophy is to reduce risk of fire, theft, sabotage, or power outage by separately protecting critical components of a DP installation, a TSI spokesman explained.

The unit provides a redundant and controlled air conditioning system, automatic fire detection and suppression, a fire-rated wall and door, a self-contained backup power supply and a microprocessor that reports automatically on all functions.

The enclosure is 8 ft 4 in. tall (adjustable) and 5 ft 2 in. in diameter. At the top of the cylinder is a microprocessor that continually monitors up to 25 parameters, maintaining necessary temperature and humidity levels, the spokesman said.

(Continued on *Page 47)*



TSI Enclosure 48

Royal System Has 128K Bytes

HARTFORD, Conn. — Royal Business Machines, Inc. has unveiled a general-purpose minicomputer system that offers up to 128K bytes of main memory and incorporates two hard disk storage module drives.

The System 9500 features an intelligent CRT terminal with 6K bytes of programmable read-only memory and 3K bytes of random-access memory, a 160 line/min printer and the storage module drives, which can handle up to 160M characters of information.

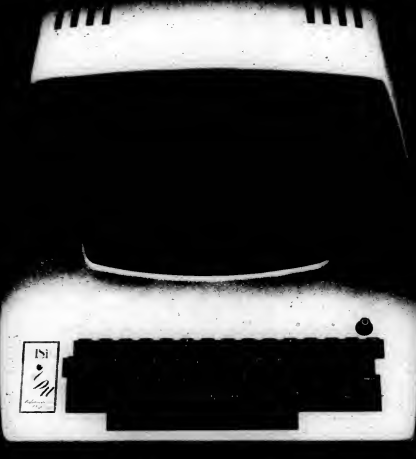
The CRT terminal, which includes an RS-232 printer interface, has a standard typewriter keyboard plus a 10-key pad with a data entry key and 16 special function keys, a spokesman said. Operator assistance is provided by nine lights on the CRT's console that inform the user of the system's status.

The Model 5051 132-column printer is of a pin-straight path design. A built-in microprocessor, combined with a self-test feature, helps pinpoint service needs, the spokesman claimed. The device has a 7 by 7 dot matrix.

The Model 4480 storage module disk drives have a recording density of 6,600 bit/-in. and 100,800 bytes for each of the drive's 815 cylinders. The units can hold 20,160 byte/track and reportedly take an average of .120 sec to locate any record stored in the drives.

The System 9500 is supplied with either a wholesaler/distributor or accountant software package, both offering up to 320M characters of stored information.

The cost of the system, including a printer stand and desk enclosure, is $59,900. An optional 300 line/min printer is also available for about $8,000 more from the firm at 150 New Park Ave., Hartford, Conn. 06106.



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Portable Computer Room Designed for Security

(Continued from Page 45)

Linked to the microprocessor is the TSI Control Console CRT, manufactured by Applied Digital Data Systems, Inc., which reports on all the parameters being monitored. The console can be remotely located; with a link to a printer, it provides a permanent record of conditions within the enclosure.

Several enclosures can be monitored by a single console, TSI noted.

The Portable Remote Monitoring Console, linked to the control console by a modem, allows communications with the computer facility from "virtually any location," according to the firm.

Mounted on Turntable

Equipment within the Enclosure 48 is accessed through a hemispherical fire door that pivots within the unit. The equipment itself is mounted on a turntable, which rotates 180° in either direction for loading or servicing.

When the heavy fire door is open, an impact-resistant transparent shield can be closed to maintain the sealed internal environment, thus allowing visual monitoring and continued protection of the enclosed hardware and data, the firm claimed.

Upon detection of smoke or fire, the fire door closes automatically, activating both audible and visual alarms. If the smoke or fire is internal, Halon 1301 gas is immediately discharged into the capsule.

In addition, each enclosure has its own key-activated access control system to prevent unauthorized access to the data or to the hardware itself. Access by authorized personnel can be automatically recorded, TSI said. In the case of ATMs, card-activated access control systems are available.

The product's approach is said to make possible unit security rather than system security — if one unit fails, the rest of the system remains intact and operative, reducing facility risk in proportion to the number of enclosures used, according to the firm.

A typical Enclosure 48 installation takes two to five days, compared with the 16 to 18 weeks it takes to set up a conventional computer room, according to TSI.

Besides distributed processing applications, Enclosure 48 reportedly allows computers to be used in places where it may previously have been impossible or impractical, such as rock quarries, steel mills, warehouses, chemical plants and mines.

Hoping to gain some insight into the DP industry's possible reactions to such a novel idea, *Computerworld* conducted an informal poll of actual and potential buyers of Enclosure 48. It got the following comments:

- "In our case, we've got an overload in the computer room and we just can't stuff anything more into it. Either we build another computer room at some great cost — with fire protection and a raised floor — or wheel in one of these and plug it in."
- "We just wish it could be bigger and could handle four or five computers instead of one or two."
- "If we're speaking of adding on equipment to a system or putting a piece of electronic equipment in a hostile environment, then something like this is certainly desirable."
- "Engineering-wise, it's really neat . . . . It would be good in situations where there are labor problems involving possible strikes, to keep the computer equipment safe from strikers."
- "It's height limits the kinds of rooms it can go into . . . . Since it's so big, it might make some people uncomfortable being near it."
- "Some computer rooms are uncomfortably cold for the people working in them, and this would let the room comply with the government's new regulations calling for higher room temperatures while adding reliability to the DP installation."

Three Versions

Enclosure 48 comes in three versions — the Model 1250 for such applications as process control and distributed processing; the Model 1750 for process control in dirty or hostile environments; and the Model 3250 for ATMs and reservation systems.

Prices range from $26,000 to $43,000, depending on the model and options. A Model 1250 with fire-rated paneling; automatic fire-rated door; 12,000 BTU heat/ventilation/air conditioning unit; uninterruptible power supply; fire detection; and optional Halon fire suppression costs $27,708.

Lease prices for that system would be $729/mo on a four-year lease, $541/mo on a six-year lease and $450/mo on an eight-year lease.

TSI is located at 299 Park Ave., New York N.Y. 10017.

DG Users Group Issues Call for Papers

NEW ORLEANS — The General Users Group has issued a call for papers for its sixth annual conference, which will be held Dec. 4-7 at the Hyatt Regency Hotel here.

Papers on all aspects of the use of Data General hardware and software are invited.

Abstracts, due Sept. 1, should be about 250 words long and represent work that can be orally presented in 40 to 45 minutes. Authors selected to participate will be notified by Oct. 15.

Abstracts should be sent to Pat Schultz, Users Group Director, Data General Corp., 15 Turnpike Rd. Westboro, Mass. 01581.

Sometimes, Out-Thinking means sticking with what works

Too many computer systems are introduced only to quickly disappear. The reason? Probably because their owners didn't profit from using them.

DATASHARE® is Datapoint's multiuser business data processing system. It's been helping its owners operate profitable businesses since 1972. Rather than reinvent, we've made proven know-how more versatile: as proof, we've installed over 15,000 DATASHARE systems to meet a wide variety of business needs.

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DATASHARE isn't getting older, it's getting better. We've continued to enhance the operating program, adding new, useful features like an automatic program generator. Along with the hardware improvements, there's a new software catalog containing hundreds of applications programs developed by satisfied users in the field.

Among the enhancements are print spooling and the ability to pool several terminals multi-dropped on a single telephone line. A DATASHARE system can even be directly linked to a 360/370-type mainframe for inquiry and update, file transfer, and a wide range of other tasks.

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A DATASHARE system can be as large or as small as you need it. It's easily upgraded. It's compatible with everything Datapoint makes, so you can tailor it to fit exactly. And coming from Datapoint, you know it's easy to use, even for beginning operators.

A single DATASHARE system allows as many as 24 users to execute the same or different programs concurrently. And systems can be linked to accommodate even more users. Virtual Memory techniques make the generation and operation of processing systems fast and easy. Communications can be terminal-to-terminal, system-to-system, or terminal-to-mainframe, in a wide variety of protocols, and all at the same time.

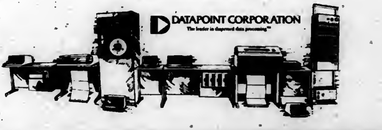
Easy operation, excellent support

Datapoint's Systems Engineers and nationwide staff of over 650 Service Reps know DATASHARE very well. That makes installation and service faster and easier. Your new system is up and running in a hurry—usually in a matter of hours.

Datapoint's approach

Datapoint out-thinks its competition to help you out-think yours. And DATASHARE is only one of the ways. Whether you need a major computing facility for corporate headquarters or 50 small systems for branch offices, we have a cost-effective solution.

To find out more about DATASHARE, or any other Datapoint product, contact the nearest Datapoint Sales Office, or write: Datapoint Corporation, Marketing Communications Dept. (M-62), 9725 Datapoint Drive, San Antonio, Texas 78284.



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RELIABLY PREVENTS "*Wild Cards*" IN YOUR DATA

Consider... ***More Detail:***

• *SUPER-MSI* PROVIDES DATASET INTEGRITY ACROSS ALL OF YOUR SYSTEMS.

In a *SINGLE* system (ie., without SHARED DASD) complete integrity is inherently maintained by the operating system. **HOWEVER**, in **MULTIPLE** sytems without SUPER-MSI, there is **nothing to prevent** users (or tasks) to different systems from **SIMULTANEOUSLY MODIFYING THE SAME DATA**, or to prevent a user from accessing data which is invalid because it is (in the process of) being updated from another system. **SUPER-MSI *Restores* this inherent integrity regardless of how many systems have access to your shared DASD data.**

• *SUPER-MSI* ELIMINATES RESERVE LOCKOUTS.

Without Super-MSI, the only sure-fire way to protect data during updates was through the use of HARDWARE RESERVE. This suffers serious drawbacks:

1. It must be EXPLICITLY INVOKED by the application programmer. Very few programmers actually consider this: those who do are hindered because it is not supported by any high-level programming language (eg., COBOL).
2. USING RESERVE LOCKS OUT THE ENTIRE DASD DEVICE and INHIBITS ALL ACCESS from other systems. Not only does this severely degrade overall throughput, but it also invites "deadly embrace" lockouts which often lead to costly IPLs. Thus if you did use RESERVE on a scale sufficient to protect your data, your systems would quickly inter-lock.

Super-MSI ELIMINATES RESERVE LOCKOUTS by eliminating RESERVES. Super-MSI transparently propagates LOGICAL CONTROL INFORMATION among all systems while eliminating the hardware DEVICE lockout. Precisely the data that needs to be protected is now serialized—the thousands of other un-related datasets on the volume remain available.

Elimination of HARDWARE RESERVES gives you several benefits:

1. **Eliminates long delays for your Real-Time and TSO users.**
2. **Reduces costly IPLs.**
3. **Increases batch throughput.**

• *SUPER-MSI* DOES NOT SACRIFICE RELIABILITY.

Previous versions of MSI and Super-MSI (and other attempts to provide MSI-type functions) suffer one critical **"Achilles' Heel"**—namely, all communication among your systems IS PERFORMED **THROUGH A SINGLE PATH** (in **MSI**, this path happens to be implemented as a SHARED DASD control table). Because the **INTEGRITY OF ALL SYSTEMS IS FUNNELED THROUGH THIS SINGLE PATH** it is IMPERATIVE THAT IT FUNCTION **FLAWLESSLY**—for if this path should ever fail, then you can kiss your integrity goodbye. With a SINGLE PATH, there is NO WAY (**not even in theory**, much less in practice) to ADEQUATELY RECOVER or even to restore your systems to a SAFE STATE (we have literature that discusses this situation in great detail and explains precisely why this is the case). Since every hardware device will eventually fail, it is only a matter of time until disaster strikes.

SUPER-MSI OFFERS A NEW DIMENSION IN RELIABILITY.

Super-MSI (the new version: 4.3) allows MORE THAN ONE communication path (ie., SHARED DASD control table) among your systems (we call this the "Unlimited Paths Recovery" feature). Super-MSI will maintain CONTINUOUS, FAITHFUL, AIR-TIGHT INTEGRITY as long as at least one path remains operative. In any system, of course, reliability can never truly be 100%; however, by placing several MSI control files (paths) on separate devices, control units and channels, you can now MAKE ALL OF YOUR DATA SAFER WITH SUPER-MSI THAN IT WOULD BE WITHOUT IT. This is because ***independent parallel failure*** must occur on ALL CONTROL FILES before ANY data integrity is lost; for example: with 3 PATHS, the expected failure rate is less than once in SIXTEEN MILLENIA; with 6 PATHS, the failure is reduced to roughly ONCE EVERY 90 BILLION (9×10^{10}) YEARS (NOTE: The entire life span of the UNIVERSE—from BIG-BANG to END is currently thought to be approximately only 80 billion years). However, not content with this, we allow over 1000 paths—more than enough, we suspect, even for the most sensitive operation. 90,000,000,000 Years is a Long Time!

A tremendous amount of effort, planning and testing has gone into this feature—particularly considering how seldomly it will be used; however, we feel it is FULLY JUSTIFIED—**just like the fire department or the Red Cross, it is "superfluous" until disaster strikes—then it is crucial.**

The "Unlimited Paths Recovery" feature was **designed with PERFORMANCE as well as RELIABILITY in mind:** In normal operation there is NO EXTRA OVERHEAD—regardless of how many communication paths you define.

• SUPER-MSI works in conjunction with MSM™ to manage inter-system TAPE DRIVE allocations.

Super-MSI, together with Allen Services' newly announced **MULTIPLE SYSTEMS MANAGER**™ automatically manages TAPE DEVICE allocation across Multiple Systems. This alleviates a troublesome operational burden. Without MSM, operators must be constantly alert as to which system is using each tape device—otherwise, jobs can ABEND and tape datasets can be over-written.

● WHEN DATASET CONFLICTS OCCUR SUPER-MSI WILL AUTOMATICALLY PROVIDE DETAILS TO ALL PARTIES INVOLVED.

This is the built-in "Dataset Conflict Manager" (DCM) which may be turned on and off at your option. It makes operators and/or TSO users (as appropriate) immediately aware of details surrounding dataset conflicts when they occur so that appropriate action can be promptly taken. This eliminates many headaches and can lead to overall throughput increase. Although everyone loves DCM, it is particularly appreciated in TSO environments. In at least one case, believe it or not, an installation WITHOUT SHARED DASD has used Super-MSI simply to get the benefits of DCM

● SUPER-MSI PERMITS MORE FLEXIBLE JOB SCHEDULING.

Without Super-MSI, many installations have resorted to segregating work by system in an attempt to minimize dataset integrity exposures. With Super-MSI, integrity is assured regardless of the system on which a job is actually executed. This "single-system" image allows work to be more evenly distributed across your shop; this load balancing can lead to increased throughput and/or work capacity.

● SUPER-MSI IS IMPLEMENTED WITH NO MODIFICATIONS WHATSOEVER TO YOUR SYSTEM OR TO ANY EXISTING SOFTWARE.

● SUPER-MSI CAN BE INSTALLED IN 10 MINUTES — NO IPL IS REQUIRED.

● SUPER-MSI REQUIRES NO ADDITIONAL HARDWARE (NOT A CTC OR ANY OTHER PARAPHERNALIA).

—YOUR SYSTEM, AS IT IS TODAY, IS SUFFICIENT. You can bring in Super-MSI right now with absolutely no investment and convince yourself it is everything we claim

● SUPER-MSI USES AN INSIGNIFICANT AMOUNT OF OVERHEAD.

● SUPER-MSI PROVIDES FEEDBACK ABOUT ITS OWN PERFORMANCE AND BENEFITS.

It includes **powerful commands** that allow you to measure its performance and benefits, and to suggest ways it might be tailored to your environment.

● SUPER-MSI IS TRANSPARENT TO YOUR USERS AND NEARLY SO TO YOUR OPERATIONS PERSONNEL.

● SUPER-MSI IS INDEPENDENT OF THE OPERATING SYSTEM—IT SUPPORTS CONFIGURATIONS CONTAINING MIXTURES OF MVS, SVS, MVT, VS1 AND MFT SYSTEMS.

● SUPER-MSI HAS A LOT OF HAPPY USERS.

SUPER-MSI is enjoyed by **over 150 installations world-wide.** Almost all combinations of systems and environments are represented. From small installations to the very largest. Everyone has unique concerns and we believe Super-MSI has been designed with enough flexibility to accommodate all. No matter how esoteric your shop, we can probably put you in touch with a very similar installation

Your data is your most valuable asset —*Protect it with MSI*

SUPER-MSI™

WHY YOU NEED SUPER-MSI:

it...

***...Protects** Your Data Integrity*
(across Multiple Systems)

...Eliminates RESERVE Lock-Outs

...Helps MANAGE TAPE DRIVE ALLOCATIONS
(in conjunction with Allen Services' new Multiple Systems Manager (MSM) product)

...Does NOT SACRIFICE Reliability

CONSIDER THE VENDOR and THE SUPPORT AS WELL AS THE PRODUCT.

Although we are quite proud of our products, we are equally proud of the support we provide. We feel we have one of the most effective support teams ever assembled. Allen Services has 20 offices throughout North America. These offices are staffed by our staff of 200 technical and support personnel. We have been in the software business for nearly a decade, and we know that no matter how good a software product is, potential for problems always exists. If a problem should ever develop which you even suspect is associated with an ASC product, we will pursue it with you until it is resolved. We believe in problem resolution—not finger-pointing or buck-passing. ASK ANY OF OUR CLIENTS—THEY WILL CONFIRM THAT OUR SUPPORT IS UNSURPASSED IN THE SOFTWARE INDUSTRY

In order to better serve our clients and the marketplace in Europe, Super-MSI is now marketed and supported in Europe jointly by Allen Services and UNILEVER GmbH. UNILEVER, which is one of the largest corporations in the world, will be able to provide the same quality support for **Super-MSI** in Europe that we provide elsewhere

Capacities Can Be Mixed

Controller Links PDP-11, Four SMD Drives

SUNNYVALE, Calif. — A disk controller introduced by Ball Computer Products, Inc. is said to interface in any Digital Equipment Corp. PDP-11 series computer with up to four SMD or SMD-compatible drives any mix of capacities.

The host-resident Model 3211, which handles data rates from 806K- to 1.2M byte/sec, mounts in a quad system backplane. Direct access to memory for all read/write block transfers is accomplished using the nonprocessor request (NPR) DEC Unibus facility, according to a Ball spokesman.

Reportedly requiring only one Unibus load, the controller can be strapped to any arbitrary interrupt priority level (BR5 standard), interrupt vector address (254 standard) and device register address (776700 standard).

The microprocessor-based controller is said to perform the overhead processing required for software-compatible emulation. The unit emulates the command and register set of the DEC RM-02 controller without modifying the software disk driver of the host computer operating system, Ball noted.

Timing errors and over/under run problems because of speed mismatch are eliminated by the controller's four sector buffering, the spokesman claimed. A 2K-byte data buffer memory reduces the required data transfer rate with the host, he added.

An integral error correction code is said to improve the interchangeability of disk packs. The code detects single-burst errors up to 22 bits in length and corrects burst errors of up to 11 bit/sector.

Overlapping Seeks

System throughput potential is said to be increased by overlapping seeks. Seek commands can be issued to any single spindle regardless of another spindle's status, the spokesman said.

If the heads are not positioned over the correct track, any I/O data transfer command will automatically cause a seek command, reducing I/O command overhead, according to the firm.

Sector interleaving allows slower computers to use high-speed disk technology by decreasing the system I/O bandwidth required for data transfers, the firm said. The host computer can read one sector, perform some processing, then read the next sector without waiting for a complete disk rotation.

Furthermore, multiple sector transfers that allow block transfers of up to 65K words with a single read or write command are said to reduce I/O command overhead and increase throughput.

Read operations can be successfully retried, Ball said, even when detected as uncorrectable data errors. To make that possible, an early/late data strobe control shifts the read strobe position relative to the data separation window.

In addition, the offset positioning locates the carriage assembly at plus or minus offset so that the processor can retry the read operation. A predetermined offset/strobe sequence is automatically attempted when an uncorrectable data error is detected.

Bad sector flagging is said to prevent faulty data recording; during the formatting process, a bit in the sector header is set to prevent use of any defective sectors.

The Model 3211 costs $6,100 from Ball Computer Products, 860 E Arques Ave., Sunnyvale, Calif. 94080.

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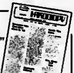

DEC Systems Gain 6,250 Bit/In. Systems

WOBURN, Mass. — A magnetic tape system that brings 6,250-bit/in. technology to Digital Equipment Corp. Unibus minicomputers has been announced by Aviv Corp.

The Model 804 magnetic tape system, compatible with the PDP-11 series as well as the VAX-11/780 minicomputer, has a data transfer rate of 470K byte/sec, reportedly almost four times the rate of a conventional 1,600-bit/in. system.

The dual-density 9-track, 75-in./sec system, having both 1,600-bit/in. and 6,250-bit/in. recording capabilities, offers more than 150M bytes of storage on a 2,400-ft reel, according to an Aviv spokesman.

Data integrity is enhanced with simultaneous on-the-fly two-track error-correction capability, the spokesman claimed, noting that tapes are fully interchangeable with those recorded on other IBM-compatible tape systems.

The Model 804 consists of a Storage Technology Corp. microsequencer-controlled tape drive and formatter and a hex-size Aviv controller adapter board employing bit slice technology.

The board fits into a small peripheral controller (SPC) slot in the host computer chassis. The Model 804 runs under all DEC operating systems that use TM11 handler, the spokesman said.

The tape drive features autoloading and autothreading of tape. It handles 7-in. to 10.5-in. open reels as well as the IBM Easyload No. 1 and No. 2 cartridges. As many as four drives can be radially connected to the formatter.

The Aviv-manufactured controller adapter has 4K bytes of storage and operates in word or byte transfer mode, the spokesman said.

The price for a single-drive system is $28,200, with OEM discounts available. An optional $1,200 cabinet includes cooling fans to house a single tape drive and formatter. A suitcase tester costs $6,500.

Deliveries will begin in September from Aviv at 6 Cummings Park, Woburn, Mass. 01801.

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Micro Opens Savings Account for Bank

By Ann Dooley
CW Staff

PHOENIX — "If anyone should know how to save money, it should be a bank," according to Clay Nimtz, vice-president of credit for the Arizona Bank here.

In keeping with this philosophy, Nimtz recently installed a microcomputer to handle certain bank functions, replacing the more costly time-sharing service previously used by credit department.

Nimtz estimated that the time-sharing service cost his department nearly $1,500/mo while the small business system cost only $2,500. "Our investment was completely paid for in only two and one half months," he noted.

The microcomputer saves the department that $1,500 each month, a figure that has probably doubled by now because twice as much work is being done on the micro than was done through the time-sharing service, Nimtz said. The only cost now is for electricity.

The credit department uses its microcomputer to spread financial data such as turn-day information and ratio computation onto paper, a task previously handled manually. Bank employees now have more time to analyze the complex data instead of just processing it.

Statistics from demand deposit accounts (DDA) for the bank's larger customers are input into the microcomputer to determine whether Arizona Bank is making or losing money on each account. If the system shows the bank is not making money, it indicates ways to adjust the account to offset any losses.

The system also performs financial statements and is programmed to spread out loan data for credit examination. As many as 40 different figures are involved in this calculation; what formerly took employees at least two hours to compute is now processed in less than half the time, providing a greater volume of work while tying up fewer people, Nimtz said.

Little Training Needed

Neither Nimtz nor his staff knew anything about computers before installing the system. They received very little training, but only because there wasn't really a need for any, he said.

"We slip in a floppy and away we go," he added, pointing out that the system was designed to lead the user where he wants to go by a question-and-answer format.

Nimtz originally turned to a microcomputer because of the lower cost, but also because — although not a computer buff himself — he realized that microcomputers are increasingly being used by businesses.

Every department in every business has reports it alone puts out — reports that take employees' time to process. That time could be cut in half and the reports could be produced for a much smaller cost, he said.

"What I'd like to see here at Arizona Bank eventually is one staff person to handle the DP work for all the departments," he added. This would be someone apart from the regular DP staff who would handle all the small separate functions.

Once he decided to install a microcomputer, Nimtz contacted Microage, a wholesale distributor that recommended the particular hardware and software programs and also provided the necessary software exper-

(Continued on Page 52)

Micro Bytes

Pascal Now Available For Zilog Z80 Systems

CUPERTINO, Calif. — Z-80 Pascal, a structured programming language designed to shorten software development time, has been introduced by Zilog, Inc. for its microcomputer and development systems.

The language features a standard procedure trap that permits calling of external, user-defined assembly language routines; a standard procedure exit which allows termination of a Pascal program from anywhere within that program; a constant subrange designator that can be used instead of enumerating all values in a set constructor; and the ability to omit the tag field in a case-variant record.

The Z80 Pascal costs $950 from Zilog at 10340 Bubb Road, Cupertino, Calif. 95014.

Two Software Libraries Ready for Apple II Users

NEWPORT NEWS, Va. — Soft-one is offering the Apple II Software Library Volume I and Volume II to users of Apple Computer, Inc. microcomputers.

The programs include an assortment of games, teaching programs and utilities and amount to less than $1 per program, according to the firm.

All the programs are written in integer Basic.

The volumes cost $14.95 each casette tape from Soft-One, 315, Dominion Drive, Newport News, Va. 23602.

No Noise Motherboard Compatible With S-100

HUNTINGTON BEACH, Calif. — NNC Electronics is offering an S-100 compatible motherboard in both 8- and 19-slot configurations.

Called the No Noise, the board is built on rigid (.093) printed circuit board stock. All lines are actively terminated with resistor networks.

The 8-slot version costs $145 and the 19-slot version costs $225. NNC Electronics is at 15631 Computer Lane, Huntington Beach, Calif. 92649.

From Percom: TRS-80 Drives, 6800/6809 Prototyping Boards

GARLAND, Texas — Percom Data Co., Inc. has expanded its TFD line of add-on minidisk systems for the Radio Shack TRS-80 microcomputer to include a dual-drive unit with double-density storage. Percom also added two models of prototyping boards for 6800 and 6809 microprocessors to its SS-50 bus.

Called the TFD-1000, the dual-drive unit provides 800K bytes of on-line storage. Two of the units can be used with the TRS-80 to provide 1.6M bytes of on-line storage.

A TFD-1000 includes an interconnecting cable for up to two units, a peripheral adapter module (PAM) printed circuit PC card, Percom's Microdos operating system and documentation. The PAM card replaces the RS-232C circuitry itself so serial interfacing capability is retained.

Microdos, which replaces TRSDOS, provides full random-access capability, is faster than TRSDOS and requires less than 7K of random-access memory, Percom claimed. Microdos is supplied on a system diskette that includes Basic program examples and a menu of the programs.

The TFD-1000 costs $2,495 for one and $4,950 for two units.

The larger of the two prototyping boards developed by Percom fits the standard SS-50 bus and the smaller card fits the Southwest Technical Products Co. I/O bus. Both boards accommodate 14-, 16-, 24- and 40-pin DIP sockets and have contacts for power regulators.

Up to 70 14-pin sockets can be installed on an SS-50 bus card and up to 34 14-pin DIP sockets can be accommodated on the I/O card, Percom said.

The SS-50 bus card costs $24.95 and the I/O card costs $14.95 from Percom, 211 N. Kirby, Garland, Texas 75042. Orders can placed through Percom's toll-free number, (800) 527-1592.

High-Speed Interactive Compiler Added by Interactive Microware

STATE COLLEGE, Pa. — Basex, a high-speed interactive compiler, has been added to Interactive Microware, Inc.'s library of software packages.

Basex is an intermediate-level language combining the ease of Basic and the speed of an assembler language, the firm claimed. The compiler allows a user to list, edit and run a program without help from any auxiliary programs such as editors or linkage editors.

The Basex runtime routines are only 2K bytes long and thus require approximately 6K bytes less memory than programs run with an 8K Basic interpreter, according to a spokesman.

Most of Basic's features such as array variables, text strings, arithmetic and logical operations on signed 16-bit integers and I/O functions are available to Basex users, he noted. Additionally, Basex allows variable names of any length, block memory searches, block memory transfers and named subroutines that can pass multiple arguments to and from the calling program, he said.

The Basex user manual, published by Byte Books, includes documented listings of the compiler and execution routines written in 8080 assembler language. The manual costs $8; a diskette or tape costs $25.

A Basex tape and disk handler program is also available which allows Basex programs to create, delete, save, verify or load named files on disk and/or tape. Basex programs can access up to five random and/or sequential files.

The manual contains fully documented source listings and sample Basexerciser programs that facilitate keyboard control of all disk and tape functions, the firm said. The manual costs $20 and the diskette or tape sells for $15.

Interactive Microware can be reached by contacting Paul Warme at 423 Kemmerer Road, State College, Pa. 16801.

APL Interpreter Ready for Z80

TORONTO — Telecompute Integrated Systems, Inc. has introduced the TIS-Z80/APL, an APL interpreter for Z80-based systems.

The interpreter makes available all monadic and dyadic APL functions, operators and system commands that are available with APL implementations on larger machines, the firm claimed. It includes a data management system and file functions that can store and retrieve data either sequentially or randomly. TIS-Z80/APL features on-line program development with line, screen and built-in text editor for inserting, deleting, replacing and changing program lines.

File organization allows mixed storage, and I/O independence supports any mix of terminal types and printers.

No other operating system is needed, while 18K bytes of random-access memory (RAM) leaves a maximum 46K-byte workspace for user. The file system version takes 22K bytes of RAM and leaves 42K bytes.

The manual alone costs $25. The workspace-oriented version WSI-1 version costs $400 while the complete file-handling TIS-Z80/-APL Version NM1-1 costs $700. Telecompute is at 251 Spadina Ave., Toronto, Ont., Canada M5T 2E2.

CAI Programs Available

YUCCA VALLEY, Calif. — Charles Mann & Associates has unveiled two computer assisted instruction (CAI) program packages for the Apple Computer, Inc. Apple II microcomputer.

The Floating Point Dictionary was designed as a teaching and reference program for Apple's Floating Point Basic. The Total Basic Teaching Pac adds a course in Basic programming.

The programs are available from dealers and cost less than $50. Dealer locations are available from Charles Mann & Associates, Micro Software Division, 7594 San Remo, Yucca Valley, Calif. 92284.

Keypunches, Micros Tied

WATERTOWN, Mass. — An interface for IBM 029 keypunches that reportedly lets microcomputers generate high-volume punch cards is available from Digital Laboratories, Inc.

The Digital PC-29 serial interface automatically feeds up to 500 cards from the input hopper to permit unattended punching. Converting any IBM 029 keypunch into a receive-only terminal, the PC-29 operates from standard RS-232-C/20mA ports at any line speed from 110 bit/-sec to 9,600 bit/sec.

Processing 10 card/min, the interface converts full upper and lower case Ascii to Hollerith code.

The PC-29 costs $1,350 complete with interconnects from Digital Laboratories, at 600 Pleasant St., Watertown, Mass. 02172.

Savings Account Opened for Bank

(Continued from Page 51)

tise. A North Star Computers, Inc. Horizon microprocessor was selected both for its capabilities and also because the bank's marketing department was already using one with positive results. The idea behind getting a second Horizon was to use one or the other as a backup system if it ever became necessary, Nimtz explained.

The system has caused Nimtz few problems. Once or twice, however, it has failed to respond. A repairman was called and he tinkered with it until it was fine again, Nimtz recalled.

Future Plans

In the near future, Nimtz hopes a loan profitability analysis program can be put together for his department. This application — currently on time-sharing — could give the department a more comprehensive and immediate perspective of the whole credit operation.

Eventually, the microcomputer might be tied into the DP department's main computer, an IBM 3033, in order to pull out more information faster.

The bank's marketing department uses its microcomputer to determine, for instance, where to locate new branch offices by determining what kind of a profit can be expected from a certain area. The system also processes other routine data and off-loads work from either the time-sharing service or the in-house DP department.

Arizona Bank is also thinking of installing microcomputers in its loan, financial accounting and reporting and sales management departments.

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In Suit Filed by Racal-Milgo

AT&T Accused of Modem Royalty Bias

By Marcia Blumenthal
CW Staff

NEWARK, N.J. — In a brief submitted to the U.S. district court here, Racal-Milgo, Inc. charged AT&T with hewing to a "divide and destroy" strategy aimed at shutting out of the market some independent modem makers.

In particular, Racal-Milgo charged that in granting licenses for Bell-patented modems, AT&T gave Codex Corp. preferential treatment, requiring the Motorola, Inc. subsidiary to pay only .2% of the net sale price of its modems. By comparison, Racal-Milgo was told it would have to pay 2%, the brief charged.

Racal-Milgo said it obtained this information as part of discovery proceedings in a patent infringement action the firm is currently litigating in Florida.

Codex's preferential treatment was part of AT&T's overall tactic of dividing the opposition from independent modem makers by co-opting certain vendors, according to Racal-Milgo. This tactic was outlined in an alleged working document discussing Bell's decision to make or buy modems, dated Nov. 27, 1973, which Racal-Milgo submitted as an exhibit to its brief.

The brief, filed July 17, petitioned the court to grant Racal-Milgo the licenses to make, sell and lease modems at the same royalty rate paid by Codex. The application for licenses was made pursuant to the 1956 Consent Decree under which AT&T and Western Electric Co. were ordered to license all post-decree patents to its competitors on a non-discriminatory basis.

The New Jersey court has jurisdiction over all suits arising from the Consent Decree, which was a settlement of a federal antitrust suit against AT&T.

Responding to Racal-Milgo's brief, AT&T said Racal-Milgo's access to the court was limited to determinations of the reasonableness of royalty fees, once the procedure set forth in Paragraph X of the Consent Decree was followed. One of the provisions of Paragraph X states that if "upon written request for a license . . . the parties are unable to agree within 90 days upon reasonable royalties or other terms, the applicant . . . may apply to this court for the determination of reasonable fees."

(Continued on Page 54)

Market for Used IBM Equipment To Double by '80, IDC Predicts

By Marcy Rosenberg
CW Staff

WALTHAM, Mass. — The market for used IBM equipment will more than double from 1978 sales of $1.2 billion to over $2.5 billion by 1980, according to a report by International Data Corp.'s (IDC) Continuous Information Services.

Fueling the demand for used equipment are its price advantages and availability, both especially attractive in light of protracted delivery schedules on certain IBM products — most recently, the 4300 series of processors.

The report cited other factors that could serve to buoy the used computer market. One is the trend by users toward purchasing and away from renting or leasing computer systems. As the installed base of user-owned systems swells, so grows the number of systems that can later migrate through the third-party market.

In addition, the used computer market will indirectly benefit from an increased demand for computer equipment. The worldwide annual compound growth rate of general-purpose CPU shipments from U.S. manufacturers will rise 4.5% from 1979 through 1983, IDC estimated.

While predicting that shipments of general-purpose computers will start to slow in 1980, IDC further forecast that the used equipment market will gain "considerable" future business in the minicomputer, small business computer and distributed processing equipment areas.

Over the same five-year period, shipments of small business systems are expected to rise 12%, with shipments of minicomputers accelerating 21%. Based on projected demand for these different computer product sectors, the used computer market will grow between 8% and 13% annually through 1983, according to the report.

(Continued on Page 57)

Burroughs Declining in Israel As Customer Defections Grow

By Alex Ragen
Special to CW

JERUSALEM — Burroughs Corp. faces a sharp decline in its Israeli customer base as users convert to other hardware and the local agent, Clal Systems Ltd., fails to make up for the defections with new sales.

Dr. Menachem Gutterman, Clal's director, told a users meeting in May 1978 that the decision of the Israel Discount Bank (IDB) — a partner in Clal's parent company — to upgrade its medium system to a Burroughs B7800 rather than to convert to IBM, a move the bank was widely rumored to be considering, had "saved the Israeli user community from being at the mercy of a single company." This was considered a clear hint that Clal would not have been able to stay in business had it lost the IDB site.

Gutterman said Clal was looking forward to a period of vigorous growth based on a new relationship with Burroughs, which had canceled and then renewed Clal's agency the year before.

But the optimism resulting from that meeting was no longer in evidence when the 15 users reconvened in June of this year. A survey of their future plans revealed that two B1800 users are converting and have put their Burroughs computers up for sale. One service bureau is dropping plans to upgrade its two medium systems to a B6800 and will install non-Burroughs minicomputers at its customer sites instead. The other Burroughs service bureau has become the local Perkin-Elmer Corp. agent, and a big bank has bought an IBM-based service boreau.

On the plus side, Clal has sold four B80s and one B7800 in four years, with most of the hardware going to existing customers.

Clal has always been plagued with credibil-

(Continued on Page 54)

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Racal-Milgo Charges AT&T With Royalty Scheme

(Continued from Page 53)

Racal-Milgo did not submit a written application for a license to AT&T and Western Electric until May 23, and therefore AT&T does not have to act on the granting of a license until Aug. 23, it said. Moreover, AT&T has never denied a request for a license, the brief noted.

Delaying Patent Suit?

AT&T interpreted Racal-Milgo's recent action in the New Jersey Court as a means of delaying a patent infringement case pending against the Florida-based modem maker by Western Electric since 1974. If the court grants "past and future" licenses for Bell-patented modem products as Racal-Milgo requested, the Florida patent infringement suit would effectively be rendered moot, according to Racal-Milgo's arguments.

AT&T argued that the equipment for which Codex obtained a license is substantially different than the equipment for which Racal-Milgo is seeking a license. Codex is currently licensed to produce scramblers and descramblers, not complete modems, and the royalty rate for this product is 5%, AT&T asserted.

Furthermore, AT&T responded that "had Codex decided to take a broader license for modems, [it] would have been asked to pay 2% of the [price of the] modem, which is Western's standard rate."

On the other hand, Racal-Milgo's application for a license lists equipment that includes digital adaptive least-mean square equalizers, digital modulator/demodulators and scramblers and descramblers, AT&T said.

From an industry perspective, the most controversial aspect of Racal-Milgo's brief was the submission of an alleged internal Bell System working document discussing the make-or-buy decision surrounding modems (see excerpt in box on Page 54). Bell discussed the strategy of co-opting the strongest, most vociferous of the independent modem suppliers by offering them the benefit of selling their products to Bell and "of having Bell's vast sales force push their products."

Although AT&T did not respond directly to this allegation in its brief, it did state in a footnote that Racal-Milgo changed the nature of the meaning of this document in its brief by changing the phrase "network integrity" to "network monopoly." AT&T also stated that it tried to interest Racal-Milgo in its patent in 1974.

At that time, Racal-Milgo told Western that it was "concerned about Western's discriminatory licensing program through which customers of Western's modems paid no royalties while customers choosing non-Western modems were charged a royalty," the brief noted.

Excerpt From Document

NEWARK, N.J. — As part of its brief against AT&T and Western Electric Co. submitted to the U.S. district court here, Racal-Milgo, Inc. included an exhibit alleged to be an internal Bell System working document.

This document outlines Bell's strategy of dividing the solid front of independent modem makers, Racal-Milgo said. The following is an excerpt from that exhibit:

"Modem manufacturers who are successful in marketing their products to the Bell System in the absences of Bell-manufactured products will have opened to them markets of a dimension which, while small to Bell, will be of staggering importance to successful outside suppliers. The size and lucrativeness of this market will clearly divide the existing solid front of Bell opposition from the modem suppliers into a least two camps.

"These camps will be composed of those successful participants who will profit from Bell's vast sales force to push their product and the unsuccessful participants who will not obtain this advantage. It is also probable that the stronger, more virulent antagonists are likely to be most successful in supplying Bell's needs for modems, providing Bell the double benefit of silencing not only a part of the interconnected oppositions, but perhaps the loudest, most effective part."

Tying up the 80's

Heading into the '80's, two major questions face systems managers. First, how do you keep up-to-the-minute with ever changing systems methodologies? Second, how do you combine the benefits of the various techniques? Ken Orr is in the forefront of developing such approaches, and because of this, he has a deep understanding of the approaches of the major systems scientists: Warnier, Jackson, Constantine, Ross, and DeMarco. Ken Orr can tie these ideas together for you in his most recent seminar, "Blueprinting the Future." This state-of-the-arts seminar is aimed at professionals who are already heavily involved in structured systems development, and is an outgrowth of his 1978 comparative design methodology course. The author of *Structured Systems Development*, Ken Orr is one of the leading developers of structured technology. He has designed *this* seminar to address the rapid convergence of the different structured trends, incorporating major advances based on his own work in the application of structuring to data base, teleprocessing, and distributed systems design.

Seminars will be held only in New York Oct. 22-26, in Chicago Nov. 5-9, and in San Francisco Dec. 10-14, with one-day management overviews preceding these dates. For early registration or information, contact Bob Otey, Langston/Kitch, 715 E. 8th, Topeka, KS 66607, (913) 233-2349

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& ASSOCIATES INCORPORATED

Burroughs Facing Israeli Decline

(Continued from Page 53)

ity problems. There have been numerous hardware difficulties and deliveries have been consistently late, prompting at least one canceled order (a B1800).

A $40,000 printer at IDB has been idle since its arrival six months ago because Clal has been unable to install the promised Hebrew character set. Other users are holding back upgrade orders waiting to see if and when Clal will solve that problem.

One defector at the meeting was overheard telling a hesitant loyalist, "Don't be the last one to leave the ship."

In Israel, Burroughs is in third place behind IBM and Control Data Corp. Perhaps nothing says it as well as their respective housing situations: IBM just inaugurated its skyscraper headquarters on Tel Aviv's fashionable King Saul Blvd., while CDC is located above a supermarket in the suburb of Ramat Aviv and Clal operates out of a converted storefront.

Supershorts

Planning Research Corp. (PRC) received a Department of Health, Education and Welfare (HEW) contract to operate HEW's micrographic facility through PRC's subsidiary, Image Data Systems Co. Valued at about $50,000 to $150,000 per year, the fixed unit price contract is for an initial three-month period, with for firm option periods totaling 44 months. The HEW facility provides computer output microfilm of financial and administrative data currently in use in its operations.

— — —

Realty Software, Inc. purchased exclusive licensing rights to market Calculations, Inc.'s Property Management program, a set of software programs designed for real estate applications.

— — —

Microage Wholesale, distributor of microcomptuers and peripherals for the small business market, is offering a Volume Reseller Program to allow dealers to broaden their product line without additional volume commitments. Under the program, the volume reseller that agrees to buy $5,000 worth of Microage products per month will receive higher discounts on selected products.

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John T. Hughes (left) is president of Mainstem Corporation, of Princeton, N.J., subsidiary of PHH Group, Inc. James Schuler is an NCR district manager.

HUGHES:
Our computer operates at the heart of our business. We use it to develop comprehensive analyses of fleet maintenance costs for over 210,000 units for our customers in the U.S. and Canada. This is our prime function. Without our NCR computer, our business would be crippled. That's why we selected NCR; NCR has always protected its users.

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Itel Halts Plans to Manufacture Mainframes

By Jeffry Beeler
CW West Coast Bureau

SAN FRANCISCO — After three months of corporate soul-searching, Itel Corp. has abandoned plans for its first in-house CPU production facility.

The move to scale down the firm's computer-related manufacturing operations will cost an estimated 100 Itel employees their jobs and has forced the company to halt construction of the 120,000 sq-ft facility that would have produced IBM-compatible mainframes in San Diego.

But the rest of Itel's manufacturing operations has survived the recent cutback and will continue to produce memory boards and laser printer controllers without interruption, according to John Clark, president of the firm's Data Products Group.

The decision to discontinue in-house development of the firm's "Hawk" mainframe followed a period of intense self-examination during which Itel announced sweeping personnel changes and struggled to redefine its corporate goals.

Itel reportedly emerged from its 120-day introspective phase with a renewed commitment to the hardware leasing and support side of its business. "We realized that distributing and servicing other peoples' equipment was our main strength as a company," Clark said during a recent press conference at Itel's headquarters here.

At the same time, however, the firm concluded that it had made a mistake by venturing into manufacturing and that it would have to withdraw from that arena as soon as possible. "We recognized that manufacturing was an unknown for us and was therefore a risk that should best be avoided at this time," Clark confided.

Post-4300 Recovery

Itel's determination to concentrate on its stengths illustrates the company's attempts to regain its corporate equilibrium in the wake of IBM's devastating 4300 series announcement. During the quarter immediately following the industry giant's introduction of that mainframe line, Itel lost an estimated $10 million, and all signs suggest the firm will continue to reel from a post-4300 hangover for some time to come.

Clark, who declined to speculate about when Itel might become profitable again, blamed his firm's current difficulties on users' preoccupation with the 4300 line and IBM's widely anticipated H series of mainframes.

Because of the 4300 family's unprecedented price/performance and its uncertain delivery schedules, many users have suspended, at least temporarily, their acquisitions of competitive hardware while they await further information about the IBM offerings and ponder their next moves. This user unwillingness to be tied to purchase agreements or other long-term commitments has seriously impeded revenue flows to many mainframe vendors, including IBM, and has loosed a torrent of red ink within Itel.

Because of its reduced sales and earnings, Itel recently found itself compelled to lay off 200 employees at its production facility in nearby Sunnyvale. About half of those workers, however, will be reassigned to jobs elsewhere in the company, Clark explained.

The same economic squeeze also has led to the demise of Itel's planned Hawk mainframes, which in processing power would have fallen somewhere between the company's AS/5 and AS/6, Clark added.

Contracts

Hetra has received a $2 million contract to provide computer systems and line printers to the U.S. Army.

General Telephone and Electronics Corp. has received a $4.8 million U.S. Army contract to provide field support for a tactical communications acquisition and analysis system.

Compuscan, Inc. has been awarded a $2 million contract for lease and maintenance of 20 Comet II systems from the Defense Commercial Communications office at Scott Air Force Base.

BDS Computer Corp. has been awarded a General Services Administration contract to supply Dataproducts Corp. printers to government users.

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Calcomp Acquires Gould Printer/Plotters

ANAHEIM, Calif. — California Computer Products, Inc. has purchased the electrostatic printer/plotter line of Gould, Inc.'s Instruments Division for an undisclosed sum.

The acquisition provides Calcomp with its first electrostatic plotters in the U.S., the firm said.

Gould's line, which includes eight printer/plotter models, interfaces and software, will complement Calcomp's four classes of electromechanical plotters — classical drum, beltbed, flatbed, and computer output microfilm (COM), according to George M. Canova, Calcomp chairman and president.

Calcomp has been marketing Gould printer/plotters in Europe since 1977 and, after several years of successful experience with the products, decided to purchase the line, Canova explained. Plans are to integrate the electrostatic plotter line into Calcomp's Graphics Products Division here, which is expected to reach full-scale production levels in 1980.

Until that time, Gould's Cleveland-based Instruments Division will manufacture the units that Calcomp is marketing directly through its 22 U.S. sales offices. Gould will continue to supply stand-alone electrostatic recorders.

Besides the products acquired from Gould, Calcomp's sales force plans also to emphasize the firm's own high-priced plotting systems and hardware spanning the flatbed, beltbed, drum and COM graphics lines.

As a result, Calcomp is organizing a national network of independent representatives to market its low-cost Model 1012 desktop drum plotter. Named to head this effort as manager for distributors and representatives was Kenneth H. Dick, branch manager of the firm's Portland, Ore., office for the past three years.

Calcomp expects to sign agreements with between 10 and 20 representatives, Dick said, adding that other Calcomp products may be made available to the reps at a later date.

Product service and support on all Model 1012 plotters sold by rep organizations will be provided by Calcomp through its network of service offices.

Price War In Japan?

TOKYO — Price-cutting practices among Japanese computer firms has sparked an investigation by that government's Fair Trade Commission. The commission suspects a violation of the Antimonopoly Act, according to *The Japan Economic Journal.*

Earlier this year, some manufacturers offered discounts up to 80% in order to make a sale of a computer system to a university in Hokkaido, the journal reported. If the commission finds that activity violated the act, it can issue injunctions against such practices.

The Committee on Prices of the House of Representatives reportedly has started to investigate the possibility of a price war.

Japanese computer companies are currently taking a wait-and-see attitude pending the completion of the committee's investigative study.

Used Market to Double: IDC

(Continued from Page 53)

Perhaps "the single most important factor affecting the used computer marketplace" is IBM itself, IDC maintained. Keeping the used equipment business humming are IBM's policies of supporting and maintaining the secondary market for its computer systems and not selling used computers at less than list price.

And IBM's product cycles largely determine the supply and demand of used equipment. As users migrate to newly announced IBM systems, they often enter the third-party marketplace to either trade in or dispose of older equipment, the report pointed out.

For stimulating movement of systems through the third-party market, IBM's 4300 series announcement proved to be no exception. As IBM 370 users seek to upgrade to the new series of processors, a large number of 115s, 125s, 145s and 148s will be thrown into the used market.

IDC forecast 58% of the 370/115 purchase base will move to the 4331; 370/125 users seeking upgrades are almost evenly split between the 4331 and 4341; and more than half of the 370/135, 138 and 145 installations will migrate to the 4341.

At the high end, however, the report noted demand only for the 3033 processor from current 370/168 users, freeing these systems for third-party transactions.

In addition, 4300 delivery stretchouts may open up many opportunities for used equipment dealers if users opt for used 370 equipment at reduced prices instead of waiting for the 4300 systems to arrive. The report projected that only 300 Model 4331s and 50 Model 4341s will be shipped this year.

Negative Impact

A negative impact of the 4300 announcement, however, was that it caused residual values of small to medium 370 systems to drop. While predicting that fair market values will rebound now that initial 4300 schedules have been disclosed, IDC said it expects residuals on 360/115s through 148s to plunge again beginning in 1980 as volume deliveries of the 4300 line begin.

According to IDC projections, 370/138s and 148s will each fall more than 30% in residual value between 1980 and 1982. During that time, 370/135, 145, 155 and 165 residuals will also plummet because of small demand.

Unlike these small- and mid-range systems, 370/158s and 168s should hold their values "relatively well" — even as the anticipated H series approaches — because these two machines have always been IBM's primary thrust, the report said: For example, IDC placed the residual value of the 370/158-3 at 50% of the current purchase price in 1979, 40% in 1980 and 36% in 1981. Comparable figures for the 168-3 were 52%, 42% and 38%.

Severe Impact

The H series is expected to have a more severe impact on IBM 3031 and 3032 processors, for which IDC predicted a 20% to 30% decline in residual values this year or, at the latest, on H series announcement day.

Residuals will be stronger for the 3033, the report said, because of greater demand and technological considerations, including the availability of multiprocessors and attached processors.

Called "The Used Computer Marketplace," the report costs $2,000 from IDC, at 214 Third Ave., Waltham, Mass. 02154.

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BALTIMORE, MD 21208 — R. Nelson, 409 Washington Ave., 301/296-4500.
CHARLOTTE, NC 28202 — J. Schwab, 1742 Southern Nat'l Ctr., 704/375-0600.
CLEVELAND, OH 44131 — A. Thomas, 5755 Granger Road, 216/749-6030.
McLEAN, VA 22101 — D. Miller, 7921 Jones Branch Drive, 703/790-1335.
NEW YORK, NY 10036 — A. O'Brien, 1311 Ave. of the Americas, 212/840-6930.
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PRINCETON, NJ 08540 — R. Davis, 3490 U.S. Rte. 1, 609/452-8135.
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SYSTEM SOFTWARE SPECIALIST

An individual with extensive OS/VS systems software experience will qualify for this position. This person will be responsible for the diagnosis, analysis, and resolution of complex system software problems This position requires a minimum six years IBM systems software experience as well as internals knowledge of VS1, SVS, and/or MVS Extensive experience with job management, data management and supervisor services is required Microcode knowledge/experience is desirable

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Take responsibility for technical direction of development projects in a structured team environment The person must provide technical expertise to the team, plan project implementation, and coordinate the efforts of several team members Extensive experience in IBM assembler language coding, TSO testing, and knowledge of operating system internals (preferably MVS) is required An applicant should have experience in structured programming and prior leadership responsibilities

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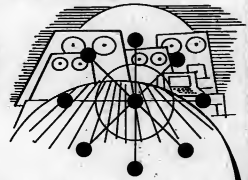

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ATTENTION EDP PROFESSIONALS

Society For Savings, a leader in on-line banking services, has immediate openings in data processing for experienced professionals.

PROGRAMMER ANALYST

This position requires an individual with 3 plus years COBOL programming experience with on-line processing and/or Burroughs software. Salary up to $22,000.

SYSTEMS MANAGER

This individual should have banking and/or general ledger-financial applications experience. Proven expertise on on-line real time systems and cost/benefit analysis is a must. Excellent writing skills and the ability to communicate with all levels of management required. Salary up to $26,000.

GENERAL LEDGER SYSTEMS REPRESENTATIVE

The successful candidate will have 2-3 years experience relative to automated general ledgers. Excellent communication skills and 20% travel is required. The ideal candidate will have consulting/liaison experience coupled with operations analysis. Salary up to $25,000.

SOLAR SERVICE REPRESENTATIVE

Field representative required for member banks of SOLAR Services, Inc. Strong written and verbal communications skills are necessary. The successful candidate will have a data processing background and/or strong customer service experience with solid DP interfacing. Salary up to $26,000.

The Society For Savings offers unusual growth opportunities in a company which prides itself on a significant record of accomplishment in the past. We offer a liberal benefits program and a "first-rate" working environment.

If you're looking for both personal and professional growth, send your resume (please, indicate position applying for) along with salary history to:

Trenton K. Mack, Management Recruiter

SOCIETY
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31 Pratt Street
Hartford, Connecticut 06103

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We currently have an opening for a person with experience in FORTRAN Compiler Development. This position involves designing and implementing extension to our FORTRAN Compiler and requires a degree in Math, Physics, Computer Science or equivalent plus at least 2 years experience in Compiler Development. This position is located in our Mendota Heights, MN. facility.

OPERATING SYSTEM EVALUATION

We currently have an opening in our System Test and Integration group. This person will assist the manager in evaluation of the Cray-1 operating system and will serve as a technical liaison with the Operating System Development group. This position requires experience in operating system test/evaluation or operating system development. A degree in Math, Physics or Computer Science is preferred. This position is located in our Mendota Heights, MN. facility.

INSTRUCTOR
(Computer Hardware)

This person will be instrumental in all phases of developing courses for customers and employees. The instructor's primary duties are to design and implement hardware training courses for classroom instruction. The applicant should have a minimum of 2 years teaching experience and 2 years maintenance experience on large scale computer systems. Writing exposure is a plus. Location is Chippewa Falls, one of Wisconsin's most attractive and scenic recreational areas.

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Manufacturing division of nationally-known corporation is expanding its data processing operation.

We need a degreed individual with heavy experience on manufacturing systems including systems design and implementation to aid in developing on-line order entry MRP and related manufacturing systems. Must know COBOL.

Excellent salary and fringe benefits package. Division is located in southeast Alabama near a major university and water recreation area. Send resume to:

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Mercer County Community College has 1-semester faculty position in introductory-level computer science/mathematics course for Fall, 1979 at Annandale Correctional Facility. Requires Master's in appropriate discipline or Bachelor's with heavy experience in computer science. Candidate should be able to teach mathematics through college algebra and trigonometry level. Must be able to deal with students who are minimal security inmates. Send resume by August 10th to: Mercer County Community College, Personnel Services, Dept. SH, P.O. Box B, Trenton, NJ 08690.

Equal Opportunity/
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Systems Analyst

Northern California Equal Opportunity Employer is seeking a systems analyst for it's expanding data processing dept. Major emphasis will be to develop communications system application software. Prior programming & systems design experience are required. Knowledge of multi-programming on a UNIVAC disk operating system is a plus.

Please request an application or submit a resume to:

Mrs. Faye Lloyd
Personnel Coordinator
CITIZENS UTILITIES COMPANY
OF CALIFORNIA
P.O. Box 2218
Redding, California 96001
(916) 347-5311

Data Communications Writers

Our Corporate Headquarters' Technical Publications' Department has several positions for qualified writers experienced in data communications documentation. Projects include researching, organizing, and writing communications-related users' manuals, systems analysts' manuals, and data sheets for Wang's Word Processor Systems, Office Information Systems, and Computer Systems.

Candidates should have two or more years technical writing experience with concentration in one or more of the following areas: BSC protocols (including 2780, 3780, 3741, or 3270), SDLC, or SNA. Bachelor's degree required; advanced degree a plus.

These positions offer career opportunities at Wang. We emphasize high quality documentation and provide an excellent working environment with complete hardware/software accessibility. Salary with benefits are competitive. Please submit your resume, including salary requirements, to Linda G. O'Connor, Wang Laboratories, Inc., One Industrial Avenue, Lowell, MA 01851.

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Expanding international Big 8 CPA firm seeks computer system professionals for immediate openings in Boston, Hartford, Newark, Cleveland, Washington, D.C. and other U.S. offices. Skills in two or more of the following areas are required:

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Commercial banking or health care experience a strong plus.

Qualified individuals must possess B.S. degree (Master's degree desired), up to five years recent in depth technical data processing experience, strong skills in oral and written communications, programming and/or system analysis. Travel required depending upon location. Salary in the $17-$35,000 range.

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ASI

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Master's Degree in relevant field plus three years programming experience . . . some of which should be in systems programming. UNIVAC equipment and academic experience preferable. Send resume and salary requirements on or before August 15, 1979, to Office of Personnel Services, Florida International University, Tamiami Campus, Miami, Florida 33199.

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DATA PROCESSING PROFESSIONALS

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- **TSO Internals**
- **Installation and maintenance of vendor software**
- **IPO System**
- **PUT Process**

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Send resume in confidence to Ray Peacoe, Employment Manager, United Airlines, P.O. Box 66100, Chicago, Ill. 60666.

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DENVER
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DICK DAVIES

Arthur Young & Company

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Data Processing

PROGRAMMER/ ANALYST

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DEPARTMENT OF

COMPUTING AND QUANTITATIVE STUDIES

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SYSTEMS DEVELOPMENT

A Project Leader or Analyst Programmer with extensive experience in the development and implementation of commercial computer systems, on large main frames and/or mini computers, is required to assist in teaching the tasks and techniques of systems development, file design principles and high level programming languages, in particular, COBOL (Ref No 228)

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(9th July Exchange Rate)

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Senior Tutor in
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A graduate with qualifications and experience in the application of quantitative techniques in a business environment is required to teach business mathematics and statistics, management science techniques or operations research. Applicants should have hands on experience with computer terminal operation and be familiar with at least one programming language, preferably BASIC (Ref No 230)

Qualifications Applicants for lecturer positions should have a first degree and extensive relevant experience. Senior tutor should have a first degree and some relevant experience. It is desirable that applicants for all positions can demonstrate an ability to communicate in a tertiary level teaching situation

Term Contracts of 1 - 3 years duration will be negotiated with each successful applicant

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Applications Details including the names, position titles and addresses of three referees should be submitted not later than 24th August 1979 to the Appointments Officer, Western Australian Institute of Technology, Hayman Road, South Bentley 6102, Western Australia. A brochure containing further information may be obtained by Telex (AA92983) or Cable (WAINTECH) citing Appointments — position No and your airmail return address

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Data Base Administrator Project Leaders

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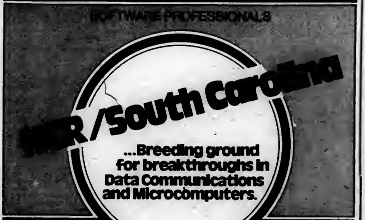
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Bill is a computer professional whose career spans over seven years of experience. He was the computing officer for First Texas Financial Corporation and was responsible for the first "on line" teller system in I.B.M.'s Western Region. Other involvement includes applications, systems software, management, user interface, and marketing. Prior to First Texas Financial, Bill was a lead programmer/analyst for Martin Company in Denver, Colorado. He was responsible for corporate accounting and some manufacturing applications. Bill has a Bachelors degree from the University of Denver.

William J. (Bill) Collen
(512) 349-3666

Bill is a computer career specialist who was the leading consultant for a national recruiting firm, (Source EDP) While manager of the Dallas/Ft. Worth offices, he had responsibility for most of the southwest area. Bill has successfully helped many individuals and corporations in most facets of computing.

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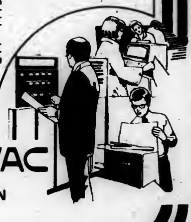

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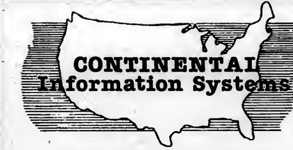

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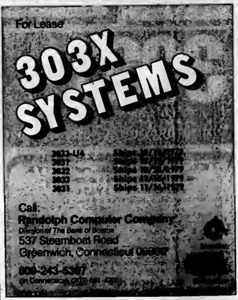

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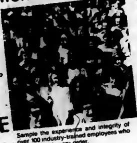

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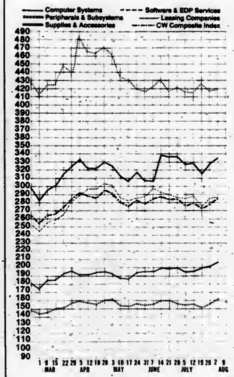

Earnings Reports

IBM
Three Months Ended June 30

	1979 (000)	1978 (000)
Shr Ernd	$1.75	a$1.19
Revenue	5,354,854	4,921,337
Earnings	667,464	591,230
6 Mo Shr	2.29	a2.19
Revenue	10,650,217	9,353,219
Earnings	1,334,301	1,290,255

a-Adjusted for four-for-one stock split paid in May 1979

MEMOREX
Three Months Ended June 29

	1979	1978
Shr Ernd	$1.32	$1.98
Revenue	187,298,000	158,508,000
Tax Cred	—	a3,270,000
Earnings	10,551,000	13,514,000
6 Mo Shr	2.79	4.11
Revenue	359,246,000	297,370,000
Tax Cred	—	a8,249,000
Earnings	22,306,000	27,875,000

a-From tax-loss carryforward

HONEYWELL
Three Months Ended July 1

	1979 (000)	1978 (000)
Shr Ernd	$2.61	$2.08
Revenue	990,700	861,200
aTax Cred	3,600	2,300
Earnings	61,300	44,000
6 Mo Shr	5.56	3.72
Revenue	1,957,500	1,650,000
aTax Cred	5,400	3,900
Earnings	120,900	79,400

a-From tax-loss carryforward

MOSTEK
Three Months Ended July 1

	1979	1978
Shr Ernd	$.67	$.53
Revenue	57,160,000	32,071,000
Earnings	3,499,000	2,591,000
6 Mo Shr.	84	97
Revenue	91,045,000	61,094,000
Earnings	4,298,000	4,703,000

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TRADE QUOTES

Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, AUGUST 1, 1979

All statistics compiled, computed and formatted by
TRADE QUOTES, INC.
Cambridge, Mass. 02139

EXCH		PRICE 1978-79 RANGE (1)	CLOSE AUG 1 1979	WEEK NET CHNGE	WEEK PCT CHNGE
	COMPUTER SYSTEMS				
A	AMDAHL CORP	23- 69	28	0	0.0
N	BURROUGHS CORP	59- 81	68 5/8	+1 3/8	+2.0
O	COMPUTER AUTOMATION	11- 46	12 1/2	+1 1/2	+13.6
N	CONTROL DATA CORP	23- 46	43 5/8	+1 1/2	+3.5
O	CRAY RESEARCH INC	8- 39	36 1/2	0	0.0
N	DATA GENERAL CORP	42- 76	64 3/8	+ 5/8	+0.8
N	DATAPOINT CORP	34- 82	76 1/4	+1 7/8	+2.5
N	DIGITAL EQUIPMENT	39- 58	57 3/8	+2 5/8	+4.7
N	ELECTRONIC ASSOC.	2- 13	6 7/8	- 1/4	-3.5
A	ELECTRONIC ENGINEER.	9- 18	13	+1 3/8	+11.8
N	FOUR-PHASE SYSTEMS	19- 49	32 3/8	+2	+6.5
N	FOXBORO	26- 44	41 1/4	+ 3/4	+1.8
O	GENERAL AUTOMATION	7- 26	12 1/4	- 1/8	-1.0
O	GRI COMPUTER CORP	1- 3	1 1/4	+ 1/8	+11.1
N	HEWLETT-PACKARD CO	47- 98	47 1/8	-46 7/8	-49.8
N	HONEYWELL INC	63- 76	69 5/8	+1 1/4	+1.8
N	IBM	64-321	74	+ 1/2	+0.7
O	MANAGEMENT ASSIST	9- 24	19	+1 5/8	+9.3
O	MANUFACTURING DATA S	4- 31	30 3/4	+4 3/4	+18.2
O	MICRODATA CORP	10- 31	28	-1 1/2	-4.9
O	MINI-COMPUTER SYST	4- 6	4 1/4	+ 1/8	+6.2
O	MODULAR COMPUTER SYS	7- 18	12 3/8	+ 1/8	+1.0
N	NCR	37- 72	70 7/8	+1 1/2	+2.1
N	PRIME COMPUTER INC	9- 22	14 1/4	+ 1/2	+3.1
N	PERKIN-ELMER	17- 34	27 7/8	- 3/8	-1.3
N	SPERRY RAND	33- 51	47	+1 3/4	+3.8
A	SYSTEMS ENG. LABS.	11- 24	13 1/4	+2 1/8	+18.1
O	TANDEM COMPUTERS INC	13- 37	29	-1	-3.4
A	WANG LABS.	8- 22	18 5/8	+ 5/8	+3.2
	LEASING COMPANIES				
O	BOOTHE COMPUTER CORP	13- 21	19 3/4	+ 3/4	+4.1
O	COMDISCO INC	3- 21	15 1/4	0	0.0
A	COMMERCE GROUP CORP	1- 1	5/8	0	0.0
A	COMPUTER INVSTRS GRP	1- 7	3 1/8	- 1/4	-7.4
O	CONTINENTAL INFO SYS	4- 15	4 1/4	- 3/4	-15.0
O	DATRONIC RENTAL	1- 4	2 3/8	+ 3/8	+18.7
A	DCL INC	3- 5	5 3/8	+ 1/4	+4.8
N	DPF INC	4- 14	9 1/8	0	0.0
N	ITEL	4- 15	9 3/4	+ 1/4	+2.6
N	LEASCO CORP	26- 69	67	- 1/8	-0.2
O	LEASPAC CORP	1- 4	3/4	0	0.0
A	PIONEER TEX CORP	3- 7	3	0	0.0
N	U.S. LEASING	13- 20	14 1/4	0	0.0
	SOFTWARE & EDP SERVICES				
O	ADVANCED COMP TECH	1- 2	1 1/8	0	0.0
O	ANACOMP INC	8- 22	15 1/2	-1 1/4	-7.4
O	APPLIED DATA RES.	4- 17	8	- 1/4	-2.7
N	AUTOMATIC DATA PROC	26- 36	35	+ 3/8	+1.0
O	COMPU-SERV NETWORK	5- 16	12 3/8	- 1/4	-1.9
O	COMPUTER HORIZONS	1- 8	3 1/4	- 1/4	-7.1
O	COMPUTER NETWORK	5- 16	8	- 1/8	-1.5
N	COMPUTER SCIENCES	8- 17	14 5/8	- 1/8	-0.8
O	COMPUTER TASK GROUP	1- 7	6 1/4	0	0.0
O	COMPUTER USAGE	2- 4	2 1/2	+ 1/4	+11.1
O	COMPUT AUTO REP SVC	4- 10	7	- 1/4	-3.4
O	COMSHARE	8- 26	16 3/4	+ 1/4	+1.5
O	CULLINANE CORP	14- 33	22 1/4	- 1/2	-2.1
O	DATA DIMENSIONS INC	2- 4	2 1/2	+ 1/4	+11.1
O	DATATAB	1- 4	2 3/4	0	0.0
N	ELECTRONIC DATA SYS.	15- 25	22 1/4	- 3/8	-1.6
O	INSYTE CORP	1- 3	1 3/8	0	0.0
N	IPS COMPUTER MARKET.	2- 3	3	0	0.0
O	KEANE ASSOCIATES	3- 6	4 1/2	- 1/4	-5.2
O	KEYDATA CORP	1- 4	6	+ 5/8	+10.5
A	LOGICON	10- 19	15 1/8	+1 1/8	+8.0
O	NATIONAL DATA CORP	7- 13	12	+ 3/8	+3.2
A	ON LINE SYSTEMS INC	12- 30	23 1/2	+ 3/8	+1.6
N	PLANNING RESEARCH	4- 10	7	+1 1/4	+21.7
O	PROGRAMMING & SYS	1- 1	1 1/4	0	0.0
O	RAPIDATA INC	3- 7	6 1/8	0	0.0
O	REYNOLDS & REYNOLDS	10- 36	28	+ 1/4	+0.9
O	SCIENTIFIC COMPUTERS	3- 9	4 3/4	- 1/8	-1.4
N	TYMSHARE INC	10- 41	34 3/8	+1 3/8	+3.7
A	UPS SYSTEMS	5- 8	6 1/8	- 1/8	-2.0
N	WYLY CORP	1- 7	5 5/8	0	0.0
	PERIPHERALS & SUBSYSTEMS				
N	ADDRESSOGRAPH-MULT	13- 32	14	+ 3/8	+2.3
N	AMPEX CORP	10- 14	15 3/8	+ 1/4	+1.6
O	ANDERSON JACOBSON	5- 10	8 7/8	+ 5/8	+6.1
N	APPLIED DIG DATA SYS	8- 22	8	- 1/8	-1.5
O	ARCHIVE INTNL	3- 7	4 7/8	+ 1/2	+11.4
A	BOLT BERANEK & NEW	6- 14	13 1/4	+ 1/4	+1.9
N	BUNKER-RAMO	10- 24	24	+1	+4.3
A	CALCOMP	3- 13	12	+ 3/8	+3.2
O	CAMBRIDGE MEMORIES	2- 4	2 3/4	+ 3/4	+37.5
N	CENTRONICS DATA COMP	18- 51	48 5/8	+2 7/8	+6.1
O	COGNITRONICS	1- 4	2 1/2	0	0.0
O	COMPUTER COMMUN.	6- 10	8 7/8	+ 5/8	+7.5
O	COMPUTER CONSOLES	4- 16	12 3/4	+1 1/4	+10.8
A	COMPUTER EQUIPMENT	3- 6	5 1/8	+ 1/4	+5.1
O	COMPUTER TRANSCEIVER	1- 5	3 1/8	- 3/8	-8.0
O	COMPUTERVISION CORP	5- 31	28 1/4	+1 1/2	+5.6
N	CONRAC CORP	13- 26	16 7/8	+1 3/8	+8.8
A	DATA ACCESS SYSTEMS	0- 10	8	- 1/2	-5.9
A	DATA PRODUCTS CORP	13- 25	19 1/2	+ 7/8	+4.7
O	DATUM INC	2- 6	2 7/8	- 1/8	-4.1
O	DECISION DATA COMPUT	2- 6	3 3/4	+ 1/2	+15.3
O	DELTA DATA SYSTEMS	1- 1	3/4	0	0.0
A	DOCUMATION INC	6- 34	21 1/4	+ 7/8	+4.2
O	DATARAM CORP	6- 32	22 1/2	+1	+4.6
N	ELECTRONIC M & M	3- 9	4 1/4	+ 1/8	+3.1
O	FABRI-TEK	1- 2	5/8	0	0.0
O	GENERAL COMPUTER SYS	1- 3	2 3/8	+ 1/8	+5.5
O	GENERAL DATACOMM IND	9- 21	16 1/4	+1 1/2	+10.1
N	HAZELTINE CORP	10- 17	16 1/4	+ 3/4	+4.8
N	HARRIS CORP	17- 36	26 7/8	- 1/4	-0.8
O	INFOREX INC	4- 11	8 1/2	+ 3/8	+4.6
O	INFORMATION INTL INC	1- 12	9	0	0.0
O	INFOTON	1- 3	3	- 1/8	-4.0
O	INTEL CORP	26- 53	49 3/8	+1 1/4	+2.6
O	INTERSIL	1- 18	15 1/2	+ 5/8	+4.2
A	LUNDY ELECTRONICS	4- 8	6 7/8	0	0.0
O	MSI DATA CORP	1- 10	7	- 1/4	-3.4
N	MEMOREX	27- 59	29 5/8	- 1/8	-0.4
N	MOHAWK DATA SCI	6- 15	11 1/2	+ 5/8	+5.7
O	OMEX	2- 8	8 1/2	0	0.0
O	PARADYNE CORP	9- 18	16 1/8	0	0.0
O	PENRIL CORP	5- 12	11 1/2	+ 1/4	+2.2
N	PERTEC CORP	8- 17	9	+ 5/8	+7.4
A	POTTER INSTRUMENT	2- 2	1 3/4	0	0.0
O	RECOGNITION EQUIP	6- 13	8 5/8	+ 1/8	+1.5
O	SCAN DATA	1- 5	1 3/4	+	+3.5
N	STORAGE TECHNOLOGY	15- 46	16 1/8	+ 3/8	+2.3
O	T BAR INC	11- 22	17	+ 1/2	+3.0
O	TALLY CORP.	6- 14	12 1/4	0	0.0
O	TEC INC	6- 13	8 5/8	- 1/8	-1.4
N	TEKTRONIX INC	33- 57	56 1/2	+1	+1.8
N	TELEX	3- 9	4 1/2	- 1/8	-2.7
O	TESDATA SYSTEMS CP	9- 26	10 3/8	0	0.0
O	WILTEK INC	1- 2	7/8	0	0.0
	SUPPLIES & ACCESSORIES				
A	AMERICAN BUS PRODS	8- 11	10 3/8	+ 1/4	+2.5
O	BALTIMORE BUS FORMS	1- 4	3/4	0	0.0
N	BARRY WRIGHT	10- 34	18 3/4	+1 7/8	+11.1
O	CYBERMATICS INC	1- 1	7/8	0	0.0
O	DUPLEX PRODUCTS INC	13- 30	25 5/8	+1 7/8	+7.9
N	ENNIS BUS. FORMS	9- 11	11	+ 1/2	+4.6
N	3M COMPANY	43- 58	53 1/4	- 1/2	-0.9
O	MOORE CORP LTD	26- 34	30 1/4	- 3/8	-1.2
N	NASHUA CORP	10- 31	25 3/8	+3 1/8	+14.0
O	STANDARD REGISTER	20- 29	26 1/2	- 3/4	-2.7
A	TAB PRODUCTS CO	8- 16	16 1/8	+ 1/8	+0.8
A	WABASH MAGNETICS	10- 22	18	- 1/4	-1.4
N	WALLACE BUS FORMS	10- 33	26 7/8	+ 7/8	+3.4

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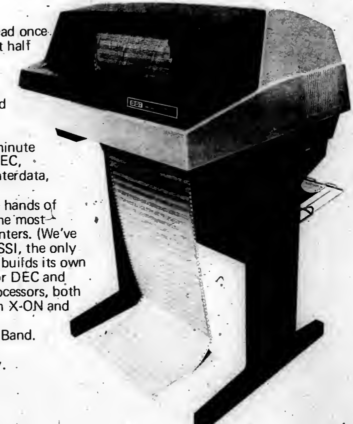

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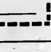

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